BUREAU OF HYGIENE AND TROPICAL DISEASES.

TROPICAL DISEASES BULLETIN.

Vol. 23.] 1926. [No. 7.

MEDICAL ENTOMOLOGY: A RETROSPECT 1923-1925.

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The last Retrospect of this subject appeared in this *Bulletin* in April 1923 (Vol 20, p. 265) and included among its principal items reviews of observations on the breeding-places of Anopheles as influenced by the "composition" of the water.; on the disappearance of malaria without concurrent disappearance of Anopheles; on tsetse-fly control through action on the general environment; and on specific differences between rat-fleas of the genus *Xenopsylla* in respect of the transmission of plague; and a note on the history and phylogeny of the Linguatulida (or Pentastomida).

In the present Retrospect publications received during the three years 1923-1925 are included; its first nine sections deal with subjects of wide general interest and importance; its following eight sections with matters of minor or more esoteric interest, some of which may be rather in the nature of caviare to the general.

The study of the environment, and particularly of the organic environment, as a necessary preliminary to the attempt to control noxious "wild" insects, such as tsetseflies and most Anopheles mosquitoes, is now being generally recognised by entomologists who work in co-operation with the sanitary authority. Old-fashioned naturalists, who were brought up on Darwin's "Origin of Species," have always looked askance at schemes for exterminating "wild" enemies of mankind in their natural environment—"wild" as distinguished from true parasites, like bugs and lice, whose environment is provided by the host itself—by crude direct attack, and have recommended the study of the third chapter of that wonderful book—the chapter on the "Struggle for Existence"—as a prologue to the study of entomology in its sanitary application to backward countries. Even the mediaeval authorities of continental Europe instinctively realized, in their procedure against noxious animals, a difference in principle between the domestic sort and the wild sort: the former were dealt with by the criminal courts, and their punishment was death; the latter came under the jurisdiction of the ecclesiastical courts, and their punishment was excommunication.

1. *Tsetse-flies.*—Certainly in the case of tsetse-flies the present tendency of protective measures seems to be to "excommunicate" the insect by operations upon the environment which at present it shares with the African native. One of the most vigorous exponents of

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this line of action is SWYNNERTON (1923, 1925), whose argument is none the worse for being based on personal experience of the African jungle, rather than on study of the "Origin of Species" or of accounts of mediaeval proceedings in ecclesiastical courts. Outside the necessary study of entomology SWYNNERTON's policy is founded on knowledge of the organic environment. Broadly speaking, its object is to make use of local agencies and resources in "excommunicating" the fly from the vicinity of villages; but to organize resources under European supervision. The natives are to be taught their own self-interest in the matter, and to be taught somewhat after the manner of Mr. Squeers, who, it will be remembered, insisted on "window" as an object to be cleaned by the pupil rather than as a word to be properly pronounced. And the lessons from the teacher should be, wisely planned settlement in large villages; husbandry rather than hunting, since hunting scatters the game, and with it the fly; periodic clearing and burning of jungle growth and of jungle around the settlement, this methodical clearing always to be a little in advance of the actual requirements of agriculture; clearing and perhaps stocking of barriers beyond the settlement. SWYNNERTON naturally does not ignore subsidiary means of destroying the fly; but the main object is to create and maintain an unsuitable environment.

A paper by FULLER (1923) dealing with the disappearance of tsetse-fly from the Transvaal from the historical standpoint and independent of any uniform settlement by Europeans suggests the influence of "floral-faunal combinations"—in other words changes in the organic environment. CURSON (1924), although he states that in Zululand European settlement has not tended to upset *G. pallidipes*, gives facts that are quite concordant with SWYNNERTON's arguments, since they show that the European farmers by leaving the riparian fringes of jungle to nature, by discouraging veld fires, and by preserving and planting shade, maintain a suitable environment for the fly. YOUNG (1925) shows how sudden seasonal extremes in the volume of a tropical river (the Volta) must influence the volume and the spread of the fly. Among subsidiary measures for controlling Glossina must be mentioned LAMBORN's (1925) well executed experiment with the Chalcidid parasite *Syntomosphorum glossinae*. The experiment, which was on a large scale, has an encouraging aspect, but must, of course, be repeated several times before any certain conclusions can be reached, since all the conditions of the experiment are not under the observer's control. The "experiments" of JACK (1923) in Rhodesia on control of tsetse-fly by destruction of game are not scientific experiments: occasional brief visits, during the course of four years, to a tsetse-infested tract, where during those four years the destruction of game had been carried on, appear to have convinced this observer not merely that the number of fly was diminished (which is not the whole point), but that the diminution was due to the destruction of the game. A long paper by ROUBAUD (1920) on the fly in French West Africa is, like all this author's papers, well worth reading, but the arguments on the protective influence of particular domestic animals are, as in the similar case of Anopheles, rather too absolute. Attention again may be drawn to the reports of the thorough survey of tsetse-flies and their activities in Nigeria by JOHNSON & LLOYD (1921, 1923, 1924).

2. *Anopheles.*—In the control of Anopheles the study of the quality of the watery medium of the larvae has recently come in for a good deal

of careful attention. This also may be regarded as a subtle aspect of the organic environment; since (within the normal limitations of animal life) it can hardly be supposed that small variations in the physical and chemical characters of the water act directly and wholly upon the larvae; it is much more probable that they act upon the microcosmic nutritional environment—upon the microscopic elements of that vegetable pabulum upon which the whole animal world is ultimately dependent. Malcolm WATSON, who drew attention to this subject many years ago, has again (1921) insisted on its practical interest. That it has a real practical interest in tropical rural areas must be obvious to all who have observed the results of trying to breed Anopheles larvae, in bulk, in a laboratory where daily supplies of their own natural water are not obtainable. That the frequency of failure is not due to decomposition going on in the water is shown by the observations of HAROLD (1923), who bred *A. maculipennis* in water that stank. That failure is due to starvation and not to the obvious state of the water is the inference from the experience of that accomplished naturalist W. A. LAMBORN, who informed the reviewer that in Malaya he could rear every species of Anopheles with the one proviso that the larvae were supplied with the common green Eugloena. BOYD also (1926) has indicated the facilities with which Anopheles larvae are reared when supplied with yeast. RUDOLFS (1924) also, who observed that water from claypits, containing high amounts of aluminum and iron sulphates, is inhibitive, concludes that it is the food of the larvae that is affected by the chemical composition of the water. In the search for some overmastering influence upon the natural conditions of life for Anopheles larvae MACGREGOR (1921, 1924) has been attending to the pH reaction of the water. CABALLERO seems to have been too hasty in his conclusion that the cosmopolitan water-weeds of the genus Chara possess this interdictive influence, since numerous observers in various parts of the world find Chara and Anopheles larvae happily associated—see in particular the papers of FISHER (1922), HACKER (1922), MACGREGOR (1924), and BARBER (1924). From BARBER'S careful observations with *Chara robbinsii*, in Louisiana, it appears that this species grows in thick mats in stagnant waters where larvae of the local species of Anopheles are extremely plentiful. BARBER'S laboratory experiments indicate the narrow limitations of the Chara doctrine; although in the laboratory the larvae did not thrive along with entirely fresh green *Chara robbinsii*, they flourished in its face if they were supplied with food, even if that food were finely-ground or rotting Chara. Another plant recently reported by WEED (1924) to have a deterrent effect upon Anopheles breeding is the ubiquitous water-hyacinth; here the explanation is that it gives specially good harbourage to the small Entomostraca, which feed on the eggs and small larvae. Still another kind of plant that has been fetched into the lime-light is the modest bladder-wort, Utricularia, the bladder-like air-floats of which, as everyone knows, entrap and digest insects; BRUMPT (1925) and LANGERON (1925) seem to think that even this humble aid is not to be despised in the struggle against Anopheles.

The healthy persistence of species of Anopheles known to be susceptible to malaria in countries where endemic malaria—once extremely common—has practically disappeared is a good example of the "excommunication" of a noxious insect from human intercourse by the creation of a sanitary environment for man. ROUBAUD

explained this anophelism sans malaria as a change not only in the habits, but also in the structure of the maxillae of the female Anopheles, due to the increase of stalled cattle; but the experiments of BULL & KING (1923), BULL & ROOT (1923), BARBER & REYNOLDS (1924) and BARBER & HAYNE (1924*a*), to name only these, do not support ROUBAUD's contention that the female Anopheles has a strongly marked special predilection for domestic animals. The reviewer's own observations (1925) of a well-spaced and well-housed population of a well-drained and well-farmed English district, from which endemic malaria has recently disappeared although Anopheles continues to thrive there, have led him to the conclusion that the Anopheles has been driven from human dwellings there by a modern sanitary environment, but still persists in large numbers outside that environment because there are plenty of farm animals to feed upon. The observations of NECHELES (1925) that it is atmospheric moisture that most influences the survival of Anopheles when they shelter in houses rather countenances this opinion. FALLERONI also (1924), though he believes that domestic animals have an actual protective influence against Anopheles, emphasizes the results of all that is implied in good farming. Before leaving the subject of Anopheles attention is due to experimental observations of BARBER & HAYNE (1924*b*), which are of general interest, on the dispersal and powers of flight of *A. crucians* and *quadrimaculatus*. In respect of flight also FISHER (1922) has noted distances of 2 miles and more, in Panama; and KLIGLER (1924), in Palestine, of more than 3 miles. A few remarks may also be made on the strange breeding-places of mosquitoes (including two species of Anopheles) in the crowns of cocoanut palms, described by HAWORTH (1924): but that that author is confident in the truthfulness and trustiness of his native collectors the association of a varied aquatic fauna with these mosquito larvae would be regarded with mistrust. Workers wishing to breed successive generations of Anopheles in the laboratory should consult the papers of HAROLD (1923) and MARTINI (1925). CHRISTOPHERS' (1924) catalogue of the Anophelini of the world is a valuable work of reference.

3. *Phlebotomus.*—The determination of the pathogenous capacity of certain common species of Phlebotomus has become more exact. The plenary observations of WHITTINGHAM & ROOK (1923) of the life-history of *P. papatasii* show up this species as truly a domestic pest, since it breeds among buildings and is incapable of sustained flight; and an experiment by ADLER & THEODOR (1925) goes almost to the point of proof—foreshadowed in 1921 by SERGENT and his colleagues—that *Leishmania tropica* can be transmitted by it. As regards the common Indian species *P. argentipes*, the discovery that the parasite of kala azar multiplies freely in its gut and pharynx has brought it into very strong suspicion as the long-sought carrier of that disease (see CHRISTOPHERS *et al.* 1925). LLOYD, NAPIER, and SMITH (1925) have shown that this species breeds around insanitary Indian dwelling-places and attacks man only when cows are not procurable. (SINTON (1925) has explained that the species described by him by the name of *P. annandalii* is identical with *P. argentipes*).

4. *Other Diptera.*—The discovery by BLACKLOCK (1926) in W. Africa of the development of *Oncocerca volvulus* in *Simulium damnosum* must be signalized as one of the important items of the present retrospect, as must also the fine critical account by the same author and THOMPSON

(1923) of the life-history of the tumbu-fly (*Cordylobia anthropophaga*). JOHNSTON (1922) has produced a useful paper on the biology of the house-fly in Australia, and DUNN (1923) on the same subject in Panama. In Brisbane, according to JOHNSTON, the house-fly completes its development from egg to adult, in summer, in 7 to 8 days. In Panama DUNN has observed pairing of house-flies to take place within 24 hours of emergence from the pupal case, a single pairing to be sufficient to fertilize the female insect for life, and also that a single female may give issue to 21 batches of eggs—to a total sum of 2,387—in the course of 31 days. GLASER (1923), in strong contrast with most other observers, states as the result of his experiments that newly-emerged (surface-sterilized) flies contained within them bacteria that must have been ingested in the larva stage. Many cases of myiasis have been reported during the last three years. In one case of cutaneous myiasis described by PATTON (1925) the maggots were those of the common house-fly. DESOIL & DELHAYE (1922) and DESOIL (1924) conclude as the result of their experiments that intestinal myiasis by Muscids such as Calliphora is not likely to be due to ingestion of the eggs, since neither eggs nor young maggots can stand the rough usage they receive in the alimentary canal.

5. *Fleas.*—HIRST (1924) has published the results of experiments confirming his earlier conclusions upon the relative incompetence of *Xenopsylla astia*, in comparison with *X. cheopis*, to spread the infection of plague. Under laboratory conditions where transmission by *X. cheopis* was easy he could not effect a single transmission by *X. astia*. He attributes the dangerous efficiency of *X. cheopis*, as a transmitter, to the facts that it bites more persistently and survives longer when "blocked," and as a disseminator, to the additional fact that its hardy and independent larvae are easily transported in the course of trade. CRAGG & SWAMINATH (1923) also have borne witness to the comparative inefficiency of *X. astia*; in their laboratory it did not live, unfed, longer than 24 hours and, moreover, was reluctant to bite man; even in a moist atmosphere it did not live long unfed. DELANOE (1925 *a*, *b*) has discovered *Pulex irritans* to be the predominant flea in Morocco; among its most liberal hosts are the jackal and the domestic pig. The same author (1922) extols the sheep with its greasy fleece as a flea-trap.

6. *Bed-bugs.*—The bed-bug theory of kala azar transmission seems to have died down; further experiments on a large scale, as by SHORTT & SWAMINATH (1925) and by NICOLLE & ANDERSON (1925), which may be regarded as decisive, have failed to elicit any evidence in its favour. DUNN (1924) has described in detail the life-history of *Cimex rotundatus*, which differs from that of *C. lectularius* only in the facts that the post-embryonic development is quicker and the adult life shorter, and that the female is more prolific—all of which illustrate the influence of tropical warmth and moisture on insect life.

7. *Lice.*—The ectoparasites of the tarbagan marmot (*Arctomys bobac*) have been studied by SAKNEV (1924) and the tarbagan-louse in particular by v. JETTMAR (1925), in connection with the spread of the plague bacillus among these marmots. The infectibility and the high infectivity of the specific louse of the marmot, a species of *Linognathus*, is demonstrated. This louse, of course, will bite other animals, in the laboratory, but will not attach itself to them.

8. *Insect Flagellates.*—BECKER (1923) has argued the extreme probability of all the 5 species of Herpetomonas, which have been

described from as many species of blowflies and flesh-flies, being identical with *H. muscae-domesticae.*

9. *Rickettsia in Insects and other Arthropods.*—Two useful papers for reference may be noted, one by HERTIG & WOLBACH (1924), the other by COWDRY (1923). The latter author (1925) has found these bodies in the gut and Malpighian tubules of a species of locust.

10. *Beetles.*—The small, active, Staphylinid beetle of the cosmopolitan genus *Paederus* have become almost notorious as causing by contact a painful dermatitis. BEQUAERT (1921) in Congoland and GORDON (1925) in West Africa have added to the list of noxious species of Paederus, and STRICKLAND (1924) in India has explained that the painful eruption of the skin known to Anglo-Indians as "spider-lick" is caused by *Paederus fuscipes.* LOIR & LEGANGNEUX (1922) have drawn attention to the symptoms—itch and irritation of the respiratory tract—produced by the hairs of Dermestes larvae in men handling stuff infested with that ubiquitous pest. FLETCHER (1924) has identified Scarabaeid beetles that in the plains of Lower Bengal and Ceylon find their way into the bowel of children; he thinks they must creep in while the child is asleep.

11. *Caterpillars with venomous Hairs.*—Quite a lot of papers have been published on the acute dermatitis, attended sometimes with fever and nervous symptoms, caused by hairy caterpillars of certain moths. Most observers agree that the injury is inflicted not by the general hairy coat, but by hairs of a particular kind disposed in definite tufts; but while some speak of hollow spines, others have carefully described hollow barbed hairs, inflated at base to contain a gland composed of one or two large cells—a true venom gland. The most valuable of recent papers are one by FOOT (1922) containing, besides descriptive matter, a list of families and genera of moths implicated, and two others by GILMER (1923) and by WADA (1925) that describe the venom-glands and venom as well as the hairs.

12. *Cockroaches.*—That furtive and obscure cosmopolite, the cockroach, has come in for a good deal of notice of late. The Trustees of the British Museum have published an "economic" pamphlet on the insect by LAING (1921). MACFIE (1922) has considered its capacity for spreading disease, finding that the bacilli of tubercle and leprosy and cysts and eggs of intestinal parasites of man can pass through its gut uninjured. GHOSH (1922) describes a new species of Balantidium from *Periplaneta americana.* TAKAHASHI (1924) gives details of the life-history of *Periplaneta americana* in the tropical climate of Formosa. GOODWIN (1925) states that in the moist atmosphere of a ship at sea sodium fluoride is useless against cockroaches. SAMBON (1924, 1925) on epidemiological grounds (which are notoriously treacherous unless the data are complete at all points and uniformly trustworthy) assigns to the cockroach (as being the intermediary host of the parasitic nematode worm, *Gongylonema neoplasticum,* shown by FIBIGER to be often an excitant of cancerous growths in the stomach of rats infected with that worm by feeding on infected cockroaches) a chief part in the spread of carcinoma among mankind.

13. *Spiders.*—The serious effect of the bite of *Lathrodectes mactans* have been described by BAERG (1923), and of "tarantula bite" [probably Lathrodectes] by CULPEPPER (1924.)

14. *Scorpions.*—The resistance offered by the domestic fowl to scorpion venom, and its voracity for scorpions, in Brazil, is noted by DIAS and others (1924), and the same remarkable appetite is mentioned in Morocco by MARCENAC (1925). FRETZ (1925), describing the effects of scorpion-sting, in Trinidad, mentions among them transient glycosuria. For immediate relief in cases of scorpion-sting SHARP (1924), who seems not to have realized that the venom of different species of scorpions may vary greatly in virulence, recommends an injection of novocain and adrenalin.

15. *Ticks.*—The spinous ear-tick, *Ornithodorus megninii*, which has been carried from America to Africa, is said by CURTIS (1923) to get into the human auditory meatus, sometimes. *O. talaje*, a transmitter of relapsing-fever in Tropical America, is stated by DUNN (1923) to have the habits of the bed-bug, and to be known locally as the "human tick." MCARTHUR (1923) and FERGUSON (1924) have written on tick-bite-paralysis; the former on the general subject, the latter on *Ixodes holocyclus* and fatalities following its bite in Australia.

16. *Mites.*—WALCH (1923), who considers the rat to be the natural source of the virus of Sumatran pseudotyphus, since in that animal its presence causes no "clinical" symptoms, regards his *Trombicula deliensis* as the intermediary between rats and man, and his *T. schuffneri* as a co-operant between human beings. He also (1924) describes and figures these and other species of Trombicula occurring in Sumatra. The source of certain food-mites found in urine of hospital patients, which attracted some attention in 1922, has been traced by MCKENZIE (1923) to the straw packing of glass used in the laboratory. In this connexion it may be mentioned that during the war a small outbreak of itch, coming within the experience of the reviewer, was tracked with pardonable incredulity to certain periscopes recently removed from their packing-case; sure enough, within the periscopes both Glycyphagus and the acarivorous Cheyletus were found alive.

17. *Insecticides.*—LECAILLON and AUDIGÉ (1921) recommend toluene for bugs, lice, and fleas; but it irritates the skin. GILMER'S (1922) trials of derris powder show it to be slower in action than pyrethrum but more persistent in the open. Calcium cyanide, a powder, is recommended by SULLIVAN (1924) for fleas; but the scattering of cyanide salts about houses is not a proceeding that the medical profession will approve. RIPLEY (1924) has some interesting remarks on sodium fluoride as an insecticide for domestic use; it is cheap and comparatively safe. For fine-spun detail on pyrethrum, see a paper by JUILLET & DIACONO (1925).

It would be unseemly and unnatural to turn from this retrospect of the living past and forget our recent mourning for those two gifted and single-minded medical entomologists, A. W. BACOT and F. W. CRAGG, who died—BACOT in Egypt in April 1922 and CRAGG in India in April 1924—when engaged in the field-study of the most dangerous of the insect-borne diseases. Both of these accomplished naturalists and devoted men sacrificed themselves in the study of typhus, and both of them, about 18 months before their death, had already suffered in a field-study, BACOT of trench fever, and CRAGG of relapsing fever. GREENWOOD'S (1924) Life of Bacot has been noticed in this *Bulletin*; a memorial tribute to CRAGG appeared in the *Indian Journal of Medical Research* for the same year (1924).

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LEPROSY.

KOPSTEIN (F.). **The Moluccas.**—*Meded. Dienst d. Volksgezondheid in Nederl.-Indië.* 1926. Pt. 1. pp. 1–78. With 28 figs. on 14 plates, 2 maps and 7 text figs. [3 refs.]. [Leprosy pp. 23-35.]

Leprosy is widely distributed in the Molucca islands, where the primitive tribes force the patients to build their own huts outside the village, but the more civilized ones take no precautions against infection; healthy children are often educated in houses of lepers, and the people live in damp dark huts. There is definite evidence of a great increase in the number of lepers in certain islands since 1901, when NEEB found them to number 89 or 2·5 per mille of the population while a recent careful inquiry revealed 163 lepers, or 5·9 per mille, almost double, in the same three islands. The total number in all the islands is now 433, only 84 of whom are in hospital, but the number is increasing. In Ambon there are 299, or 5·9 per mille, and in the capital the rate is no less than 12·5 per mille. In the islands the native Christians suffer four times as much as the Mohammedans, although no evidence of hiding cases among the latter was found, and the only difference noted between their villages was that the Christians alone kept dogs, but the author attributes the difference to close intermarriage among the Christians, who do not travel from their villages, and he is inclined to think that heredity plays an important part because children often fall victims to the disease. [He does not appear to have taken into account the much greater susceptibility of children to infection]. The numbers differ much in the various islands, no lepers having been found in Buru with 4,000 people. He considers that the only practical method of dealing with the disease is by compulsory isolation; he thinks there would be little difficulty in carrying it out, and he quotes evidence to show that formerly compulsory segregation considerably reduced the number of lepers, but its relaxation in 1866, in consequence of medical opinion then favouring the hereditary view of its causation (chiefly as the result of the report at that time of a Committee of the Royal College of Physicians of London), had "a most deplorable result" in a great increase of the disease. In 1892 the Government decided that help should be given only when private initiative proved insufficient, and a Society for fighting Leprosy in the Moluccas has now provided an asylum in Amboina with Government help. This now has a capacity for 100-150 patients, and is about to be enlarged to hold 500, when an ordinance will be published compelling the lepers to be interned. "The next few years will be a turning-point in the history of leprosy in the Moluccas."

L. Rogers.

PULIDO (A.). Note sur la lèpre en Espagne. [**Leprosy in Spain.**] —*Bull. Office Internat. d'Hyg. Publique.* 1926. Jan. Vol. 18. No. 1. pp. 54-56.

The chief centres of the disease are in the Levant provinces, Andalusia, Galicia and the Canary Islands. The official statistics of 1914 gave 898 cases, including 82 in the Canaries, and a recent inspection showed 579, of whom 228 were isolated. Abundant legislation for its control exists, but the State does not provide sufficient funds, 100,000 pesetas being divided between the four leprosaria of Fontilles, in Alicante, La

Corogne, Grenada and the Canaries. Leprosy other than advanced nervous and mixed forms is amenable to treatment, and progressive amelioration up to cure is not rare with continued energetic treatment. When the general practitioner can recognize the early stages leprosy will be stamped out, compulsory segregation being enforced under the best conditions of sanitation and comfort.

L. R.

MATARANGAS (G.). La lèpre en Grèce. [**Leprosy in Greece.**]—*Bull. Office Internat. d' Hyg. Publique.* 1926. Jan. Vol. 18. No. 1. p. 57.

In 1924 310 lepers were known in Greece, including 200 in Crete, 28 in Thassos, 25 in Chio, 24 in Samos, and fewer elsewhere. Compulsory notification and isolation is enforced in four institutions respectively in Spina-Longa in Crete, Chio, Samos, and Mont-Athos, work on cultivation being arranged for. The immigration of lepers is forbidden and they are not admitted to schools. In Chio MUIR'S E.C.C.O. ethyl ester hydnocapate has been in use, and the results have been more marked and lasting than with chaulmoogra oil.

L. R.

ABBATUCCI (S.). La lèpre à Madagascar. [**Leprosy in Madagascar.**] —*Presse Méd.* 1926. Apr. 14. Vol. 34. No. 30. p. 476. With 1 map in text.

There are now 2,306 lepers isolated, but the total number is believed to be about 6,000. The disease is dealt with under an ordinance of 23rd February, 1911, providing for home isolation only in rare cases and the provision of leprosaria for 3,930, which will be increased to nearly double that number before long. Infants borne to lepers are taken care of for five years in a special institution, and if found to be healthy are then entrusted to healthy relatives; several years' experience shows that they remain well. No treatment has been of benefit except ethyl esters of chaulmoogra oil, which has produced improvement, but the trials are too recent to allow of a final opinion on their value.

L. R.

WOLFF (J. W.) Het lepra-probleem in Suriname. [**The Leprosy Problem in Surinam.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 5. pp. 572-582. [2 refs.]

Wolff gives an account of the history of leprosy in Surinam, which apparently was not endemic in South America but imported with negro slaves about the middle of the 17th century. Regulations intended to combat its spread have never been sufficiently enforced, with the result that leprosy is still prevalent (the author estimates the sickness rate to be 7 per 1,000) and constitutes a real menace. Possible reasons for this neglect are (1) the fact that the population is not at all afraid of contagion, but has superstitious ideas about the causation of leprosy, (2) the numerous family relations, a sequel of intermarriage of the colonist families, by which many lepers are related to some government officer who may interfere with the activity of the authorities.

Wolff gives an account of the measures recently introduced for the registration of lepers. He urges the necessity of leper colonies along the lines of the village system, thus encouraging voluntary segregation and early separation of new born children from their leprous parents.

W. J. Bais.

RANGEL (Mario). Notas sobre a prophylaxia e a therapeutica da lepra. **Prophylaxis and Treatment of Leprosy.**]—*Rev. Med. Cirurg. do Brasil.* 1926. Mar. Vol. 34. No. 3. pp. 113-126.

This interesting paper gives an account of the prevalence of leprosy in Brazil in general and of two or three districts in particular. The previous estimate of 12,000 lepers is considered an understatement, the total being probably in the neighbourhood of 20,000. In the State of Pará some not very reliable statistics have given 3,000 infected. The author is strongly against mere isolation as savouring too much of incarceration, but speaks highly of the "colony" system, especially the "model farm-colony" in S. Antonio do Prata, in Pará, contrasting this with the bad conditions in S. Paulo and Minas.

The latter part of the paper deals briefly with the general question of leprosy and its treatment by (1) living agents, such as bees, the patient being subjected to the stinging of 20 to 200 bees at a time, from this appreciable improvement has been reported. (2) Physical agents, such as X-rays and carbonic acid snow, with good results at the end of a year's treatment. (3) Biological products—leproline, nastine—with inconclusive results. (4) Chemical, as cparseno and chaulmoogra oil or its derivatives.

Trial is also being made of an Italian preparation, Antilebrina, and of an antilepra vaccine, but they have not yet been sufficiently employed to warrant a report.

H. Harold Scott.

PUPO (Aguiar). O Leprosario de Santo Angelo. [**The Santo Angelo Leprosarium.**]—*Ann. Paulist. Med. e Cirurg.* 1926. Jan. Year 14. Vol. 17. No. 1. pp. 12-18.

The author deals with objections brought against the leper asylum of S. Angelo. The chief of these were :—(1) The proximity of the leprosarium to the capital. It is, however, 40 kilometres distant, affords a standing testimony of its value, is readily accessible to visits by medical men and relatives of the patients, and its arrangements are such that other sufferers are attracted to present themselves for treatment. (2) The discharge of sewage from the leprosarium into the Tieté is a danger to the town below. It is held that this river receives the sewage of the whole city of S. Paulo and that biological treatment renders it innocuous. (3) That it is inadequate for the needs of the district. This can be remedied by the erection of others.

H. Harold Scott.

HUDELLET (G.) & MOREAU (G.). Contribution au diagnostic précoce de la lèpre par les rayons X. [**Early Diagnosis of Leprosy by X Rays.**]—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 757-758. With 2 figs. on 1 plate.

An early case of leprosy is reported in which X-rays revealed in the bones of the hand light areas of partial decalcification of diagnostic value.

L. R.

GOMES (Jose Maria). A lepra e os erros de diagnostico. [**Mistakes in the Diagnosis of Leprosy.**] Trabalho lido na Sociedade de Biologia e Hygiene de S. Paulo, em 9 de Dezembro de 1925. —15 pp. 1926. Instituto de Hygiene de São Paulo.

An interesting paper showing that leprosy is often overlooked, particularly in the early stages, when cure may be more hopefully expected, and that erroneous diagnosis is sometimes due to insufficient examination, sometimes to unwillingness to stamp the patient as leprous.

These "slips" are more frequent according to the social status of the patients—a significant fact. Twenty cases are briefly recorded, some of which may be mentioned. A leprotic macula is diagnosed as gouty eczema, or urticaria from intestinal toxaemia; perforating ulcer of the foot as an infected corn; many are regarded as syphilitic. The author lays stress on the presence of general or localized pains of a rheumatic character as an early symptom in many cases, and if these pains do not soon disappear the medical attendant should be on his guard and examine carefully for maculae or anaesthetic patches and the nasal mucus for bacteria.

H. Harold Scott.

UCHIDA (Shigeo). Die statistische Studie der Leprakranken in der Gegend von Okayama-Präfektur. [**Statistical Study of Leprosy in the Okayama Prefecture.**]—*Japan. Jl. Dermat. & Urol.* 1926. Jan. Vol. 26. No. 1. German summary p. 2. [In Japanese pp. 34-48. With 1 chart in text.]

At the Okayama skin diseases clinic from 1914-1924 320 lepers were seen, or 0·78 per cent. of the whole number of cases. Males 70·3 per cent., women 29·7 per cent. Lepra maculosa 50·7 per cent., nerve 29·7 per cent., nodular 13·4 per cent., and mixed 5·9 per cent.; most frequent age 20-30 and very few children under 10 years.

L. R.

ROGERS (Leonard). **Resemblances between Leprosy and Tuberculosis.** —*Brit. Jl. Tuberculosis.* 1925. Apr. Vol. 19. No. 2. pp. 69-73. [8 refs.]

It is well that the close resemblances between tuberculosis and leprosy should be emphasized by one, like Sir Leonard Rogers, whose life has been spent in a country where both diseases are endemic and where opportunities for comparing them are frequent. Tuberculosis is, indeed, the "leprosy" of our civilization, and the student of tuberculosis has much to learn by a study of the decline and fall of leprosy in Europe, and its persistence to this day in more primitive countries. Sir Leonard's paper must be consulted in the original to appreciate the skill with which the numerous analogies between the two diseases are brought to light. Perhaps the most important point is the emphasis laid upon close personal contact in over-crowded houses in the transmission of infection in both diseases and the susceptibility of the early years of life. Stress, too, is laid upon the need to differentiate between the highly infective "open" case of phthisis or the ulcerating case of nodular leprosy on the one hand and the closed tuberculosis or the anaesthetic type of leprosy on the other. The indiscriminate branding of all phthisics and all lepers as highly dangerous has led to much

unnecessary hardship and suffering, and to much waste of energy time and accommodation space. The new analogies brought to light by the work of Sir Leonard Rogers in the development of the treatment of both leprosy and tuberculosis by the morrhuates and gynocardates constitute, in themselves, a vast field for future study and research.

S. L. Cummins.

KÄYSER (J. D.) Beschouwingen naar aanleiding van het Verslag van de IIIde Internationale Lepraconferentie, gehouden te Straatsburg van 28-29 Juli 1923. **Considerations with regard to the Report of the IIIrd International Leprosy Conference, held at Strassburg, 28th-29th July 1923.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 6. pp. 716-750.

Käyser summarizes the contents of this report. He is disappointed in noticing that no great progress has been made since the previous conference at Bergen. He compares the leprosy campaign with the measures taken against tuberculosis and thinks that the former does not show favourably. He gives his opinion that in the cure of leprosy general treatment (especially hot baths) may be of distinctly helpful influence, a fact which is often neglected or forgotten. In regard to legislation he expresses his satisfaction about the more and more generally accepted opinion that compulsory isolation is of little importance in combating leprosy. More human ways of segregation and prevention of contagion are recommended by the Report.

W. J. Bais.

WADE (H. W.) **Notes on the Pathology of Leprosy.**—*Jl. Philippine Islands Med. Assoc.* 1926. Feb. Vol. 6. No. 2. pp. 37-42. [9 refs.]

"In spite of the renewed interest in the leprosy problem aroused by increasing success in the treatment of this disease, comparatively little attention is being paid to its pathology," certain salient points in which are discussed in this paper. There is still a divergence of opinion in regard to the relation of the lepra bacilli to cells, one school holding that they are extracellular, situated in blood and lymph capillaries and in unlined lymph spaces, where a peculiar material accumulates around them to form the typical vacuolated appearance of leprotic lesions as held by UNNA; while VIRCHOW and his followers maintained that the bacilli are inside large cells, apparently the large mononuclear wandering cell, where they multiply. The writer subscribes to the compromise view that the lepra cell predominates in the typical leproma, but the bacilli are also scattered in tissue spaces and capillaries, and may have originated from cells which have died and disappeared. Difficulties arise owing to the organisms easily losing their acid-fastness, but he has been able to develop a technique (details not stated) that demonstrates that the more sensitive, ? dead, bacilli may be present in large numbers, as well as the apparently younger, more resistant ones. The cutaneous type develops in persons with a low resistance to the organism, and the neural type in those with greater resistance, and in a large proportion of 500 autopsies on advanced cases "the cutaneous lesions have undergone retrogression as the result of treatment, or acquired immunity or complicating tuberculosis, which last curiously has this effect." [This is interesting

in relation to ROGERS' view that the incidence of leprosy in Africa, Asia and Europe is inversely proportionate to the degree of tuberculization of the population.] The peripheral nerves are nearly always involved in cutaneous leprosy and evidence is always found post mortem of more extensive infiltration or subsequent fibrosis than was suspected clinically ; some disturbance of sensation, however, is common early in the disease often as the earliest clinical evidence, and sooner or later degenerative changes occur in the nerve fibres due to the effect of toxins or pressure. Lymph node involvement is important and is thought by MARCHOUX, who found it in rat leprosy, to be possibly the site of infection in latent leprosy, and the organisms may also persist in the glands after they have disappeared from visible lesions ; French colonial observers have found them by aspirating the inguinal glands in some apparently healthy contacts with lepers, and PINEDA at Culion aspirated in this way 53 ex-lepers about to be discharged with 9 per cent. positive results. The testis is the only other organ extensively and regularly involved, with loss of sexual power in advanced cases, but the ovary suffers very little, so females remain fecund. The bacilli may be found in nearly all the other organs of the body, but without producing important lesions. Infiltration of the nose and larynx is well known and most important for the dissemination of the bacilli, but these lesions are very rarely if ever primary ones. The gastro-intestinal tract is very infrequently involved and the mesenteric lymph glands only occasionally contain bacilli.

Nerve Leprosy.—True nerve leprosy presents a great contrast to the cutaneous form, as the disease begins in and remains limited to the nerves and is comparatively very inactive in type, no case having been found post mortem to be in a progressive stage ; the bacilli are possibly confined exclusively to the nerves at the time of death, although the patients commonly show clear evidence of pre-existing lesions of the skin and other organs. The trophic ulcers rarely contain the bacilli, so are infinitely less infective than ulcerated skin nodules. In old secondary nerve cases in particular there is often found a high degree of arterio-, and particularly phlebo-sclerosis in the vessels of the limbs, and local degeneration of the veins is not uncommon, but the large vessels such as the aorta are rarely affected.

The bacillus is extremely refractory to cultivation and animal inoculation, and serologically cannot be differentiated from other acid-fast organisms, and it has a very low degree of toxicity, the lepra reactions and fever being apparently " due to some peculiar temporary upset in the balance between organism and host, probably anaphylactic in nature, and not to bacterial toxins in the strict sense." The evidence regarding the Wassermann reaction is conflicting, but 500 tests at Culion showed that with a carefully adjusted technique positive reactions were not obtained unless some complicating disease such as yaws (and presumably syphilis) was present, except that a certain number of leprosy cases give weakly positive results. There may also be a marked globulin excess, which becomes extreme in cases of lepra reaction.

L. R.

PINEDA (Eloy V.). **Leprosy as a Cause of Death.**—*Jl. Philippine Islands Med. Assoc.* 1925. Dec. Vol. 5. No. 12. pp. 360-365. [2 refs.]

Since the previous report of 200 autopsies with only 7 cases of death directly attributed to leprosy 200 more have been performed with a

total of 18 or 3·6 per cent. of the 500 cases, 12 ascribed to leprous cachexia, 4 to lepra reaction, 1 to leprotic acute exfoliative dermatitis and one to laryngeal obstruction. The secondary causes of death are mostly tuberculosis and nephritis. In cases of fatal lepra fever or reaction the bacilli may be found in the circulation, and anaemia, nephritis and exhaustion may result.

L. R.

SOLIS (F.) & WADE (H. W.). **Bacteriological Findings in Children of Lepers, with Special Reference to Nasal Lesions.**—*Jl. Philippine Islands Med. Assoc.* 1925. Dec. Vol. 5. No. 12. pp. 365-369. [11 refs.]

"A firmly entrenched error in connection with leprosy is the belief that the nasal mucosa is one of the important sites of the primary lesion of this disease, if not the most important one." This idea persists in spite of repeated findings to the contrary. The facts are that nasal lesions are far from constant even in well-established cases, and are infrequent without definite lesions elsewhere, and that the findings of a few acid-fast bacilli in nasal material not very typical in appearance and arrangement is not a sufficient basis, in the absence of other evidence, for a diagnosis of leprosy. JOHNSTON in over one thousand examinations in the Philippines obtained positive results in less than 50 per cent. of well established cases, and in only 13 per cent. of nerve forms, and concluded that nasal acid-fast bacilli were not certain evidence of leprosy, and other workers there and in Hawaii found nasal examinations of little or no value in early diagnosis of leprosy. More recently 250 children of leper parents in Culion, among whom positive cases were arising from time to time, have been examined after living with their leper parents; all were over three years of age, and included 127 clinically negative, 87 suspicious and 36 clinically positive, the skin lesions also being examined microscopically when present. In not a single instance were nasal smears positive in the absence of positive skin lesions, confirming previous findings in these children.

Of the 250 children 35, or 14 per cent., gave positive results, the percentage increasing with the age of the subjects from 7·1 per cent. in those 3 to 6 years old to 20 per cent. at 12 to 15 years. Further, 60 per cent. of the positive cases were found so for the skin only. "These findings are very striking. They strongly indicate that nasal lesions are entirely secondary manifestations in young children."

L. R.

REENSTIERNA (J.). Reproduction expérimentale de la lèpre chez les singes inférieurs. [**Experimental Reproduction of Leprosy in Java Monkeys.**]—*Ann. Inst. Pasteur.* 1926. Vol. 40. No. 1. pp. 78-88. With 7 figs. on 3 plates. [4 refs.]

Bonnet monkeys, *Macacus sinicus* and *rhesus*, have been inoculated with a fresh emulsion of leprous nodules rich in bacilli from an active nodular leprosy in subjects free from clinical tuberculosis, guineapigs being inoculated at the same time with negative results to exclude tuberculosis. All traces of the injections disappeared in three days, but after an incubation of 37 to 45 days 3 *M. sinicus* and 4 *M. rhesus* developed nodules gradually increasing to the size of a pea or a prune

and persisting for from 40 to 62 days. One nodule remained after seven months, and they were clinically and microscopically similar to human lesions as proved by examinations of removed pieces, which showed typical large vacuolated cells containing acid-fast bacilli in bundles. Two of the *M. sinicus* were reinoculated 6 and 7 months after the complete cure of the first-produced lesions, and both developed nodules after shortened incubation periods of 19 and 22 days respectively, which persisted for 40 and 45 days. A *M. rhesus* inoculated with emulsions of three of the other monkey's nodules gave a negative result, and all the removed monkey's nodules were injected into guineapigs with negative results, showing that the lesions were not tubercular in origin. He therefore concludes that he has succeeded in reproducing in non-anthropoid apes localized leprosy lesions.

L. R.

OLIVER (Jean). **The Origin of the Lepra Cell.**—*Jl. Experim. Med.* 1926. Feb. 1. Vol 43. No. 2. Pt. 1. pp. 233-239. With 2 figs. on 1 plate. [14 refs.]

Rats inoculated intraperitoneally with rat leprosy 10 and 11 months previously were given subcutaneous injections of 2 cc. of a 1 per cent. aqueous trypanblue solution repeated twice at six day intervals; this produced vital staining with dark granules of the histiocyte cells only. At the end of the experiment they were killed and fixed in toto in 10 per cent. formalin, and the leprous lesions in the subcutaneous tissues and small nodules in the liver and lungs of one animal were examined histologically. It was thus found that round the leprous tissue there was an accumulation of the histiocyte or reticulo-endothelial cells deeply stained, and all the stages of the gradual transformation of these cells into typical large vacuolated cells crammed with lepra bacilli, but containing no vital staining, could be traced; the blue granules gradually disappeared in proportion as the transformation took place. In a similar way it had previously been found by other observers that the giant cells of tubercle are formed mainly from the same type of cell.

L. R.

SECHI (Elio). Le reazioni di Wassermann e di Sachs-Georgi nella lepra. [**The Wassermann and Sachs-Georgi Reactions in Leprosy.**] —*Sperimentale.* 1925. Vol. 79. No. 6. pp. 1069-1074. [8 refs.]

The author tested the sera from 11 cases of leprosy—4 nodular, 2 anaesthetic and 5 mixed—by the Wassermann, the Sachs-Georgi, and the Sachs-Wassermann reactions (the Gaethgens and Salvioli technique). The last two were carried out with both active and inactivated sera. In one case syphilis could not be excluded, and this one gave positive results throughout. In the cases of the remaining ten, the results of the Sachs-Georgi reaction were, with active sera: Seven proved negative and 3 doubtful (one of the anaesthetic and 2 nodular). With inactivated sera the results were almost identical, the only difference being that the doubtful anaesthetic case now proved definitely negative. The Sachs-Wassermann gave negative

results in all ten with active sera and inactivated. The Wassermann itself proved positive in 3 nodular, 3 mixed and 1 anaesthetic and negative with 1 of each type.

H. Harold Scott.

VAN DEN BRANDEN (F.). La réaction de Bordet-Wassermann dans la lèpre. [**The Bordet-Wassermann Reaction in Leprosy.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 171-174.

Of 24 lepers 14 gave negative, 5 positive reactions and 1 was anticomplimentary. Of the remaining 4, 3 were positive at first, but became negative after treatment with eparseno, and in the fourth reaction had become slight.

L. R.

SABRAZÈS (J.). Léprose massive de la rate et du foie ; pas de bacilles de Hansen dans la bile. [**Massive Leprosy of the Spleen and Liver: Lepra Bacilli Absent from the Bile.**]—*C. R. Soc. Biol.* 1925. Dec. 18. Vol. 93. No. 37. pp. 1526-1528.

At an autopsy on a leper covered with ulcerated nodules sections of the liver and spleen showed very dense masses of lepra bacilli, the kidneys and lungs contained much fewer and the cerebro-spinal system none. Repeated examination of the bile, however, revealed no bacilli, although in the liver itself there was a great accumulation of macrophages of the type of Kuppfer's cells filled with lepra bacilli. Similar changes were found in the spleen in the reticulo-endothelial cells of the pulp and sinuses, but very few in the Malphigian corpuscles, thus differing considerably from the lesions produced by tuberculosis.

L. R.

GILBERT (A.), TZANCK (A.) & CABANIS. De l'accélération de la sédimentation sanguine au cours de la lèpre. [**Acceleration of Blood Sedimentation in Course of Leprosy.**]—*C. R. Soc. Biol.* 1926. Apr. 9. Vol. 94. No. 12. pp. 837-839. With 2 text figs. [1 ref.]

The authors find that the rapidity of sedimentation of the blood is increased in the course of leprosy, especially during the active progress of the disease.

L. R.

KEW BULLETIN OF MISCELLANEOUS INFORMATION. Roy. Botanic Gardens. 1926. No. 1. pp. 17-23. With 2 plates.—**The Treatment of Leprosy by Vegetable Oils.**

This informative article has been prepared by Dr. T. A. HENRY and begins with references to the early work of Sir David PRAIN in 1901 in discovering that chaulmoogra oil is derived from the *Taraktogenos Kurzii*, and not from *Gynocardia odorata* as formerly thought, and of F. B. POWER and others in 1904 in showing that this oil and the Hydnocarpus oils contain chaulmoogric and hydnocarpic acids with a

cyclic structure and optical activity, and the preparation of "gynocardic acid" and "sodium gynocardate," really a chaulmoogra oil soap. It continues: "The first real advance on the medical side was made by Sir Leonard Rogers, who began work in India about 1915. He used at first sodium salts of the total fatty acids of both chaulmoogra and hydnocarpus (*H. wightiana*) oils, but eventually got the best results with sodium salts of fractions of the fatty acids rich in hydnocarpic acid." The introduction of ethyl esters of chaulmoogric and hydnocarpic acids by DEAN & HOLLMAN followed, which have been used with such success by them, Dr. E. MUIR in India, the Philippine workers at Culion, etc. Recently Dr. HENRY has examined Gorli seed oil from Sierra Leone, which had been found unsatisfactory in treatment in the Philippines, and showed the failure to be due to its containing only the comparatively inactive chaulmoogric acid and none of the active hydnocarpic acid, so that the two oils already mentioned, together with that from *Hydnocarpus anthelmintica* of Siam, Indo-China and China, are the best for use in this disease. In connexion with the oral use of the seed more recently recommended it is pointed out that all the species yet examined contain cyanogenetic glucosides, and in Hamburg in 1911 a Hydnocarpus oil used for the manufacture of edible articles gave rise to cases of poisoning.

Dr. J. F. ROCK has reported on the localities of these oil bearing trees. The Taraktogenos grows in Assam, Burma, Malay, the Dutch East Indies and Indo-China, best in a hilly humid area with winter temperature not below 40 F°, and Hydnocarpus in well drained sandy or loamy silt soils and best along creek beds or on banks of streams; all require climates of the tropical evergreen forest. It is difficult to obtain the pure fresh oil of the Taraktogenos, but *H. wightiana* in the Western Ghats of south-west India from North Kanara to Travancore up to 3,000 feet above sea-level grows to 50 to 100 feet. *H. anthelmintica* is known in Siam as "Maikrabao" or "lukrabao," and in China as "Ta-fung-tse," and is cultivated in Siam up to elevations of 1,000 feet, and grows especially on the banks of rivers and estuaries. The seed obtained from native collectors is unreliable, but when the trees that have been established in various countries bear in a few years time it will be available. For transmission the seed should be packed in moist powdered charcoal in cotton bags wrapped in strong oil paper and then in heavy manilla paper in order to secure its vitality. Much remains to be learned of the group.

L. R.

PERKINS (Granville A.). **A Summary of Recent Developments in the Chemistry of Leprosy Therapy.**—*Jl. Philippine Islands Med. Assoc.* 1925. Dec. Vol. 5. No. 12. pp. 369-374. [1 ref.]

This paper gives an interesting summary of the work done on the chemistry of chaulmoogra, and other oils used in leprosy treatment in Philippines and elsewhere in recent years. "Certain oils, or their derivatives, properly applied, cause retrogression of the disease in the large majority of cases" if without serious complications; they "require a long time and careful supervision, but apparent or actual cure can be eventually effected in the large majority of the cases properly treated at a sufficiently early stage of the disease, and in a smaller percentage of more advanced cases." The chaulmoogra oil series, containing fatty

acids characterized by the presence in the molecule of a closed ring of 5 carbon atoms, is the most active, and 8 different preparations containing these oils have been tested by intramuscular use at Culion; none was found superior to the refined oil with 0·5 per cent. iodine. The fatty acids constituting the bulk of the oil are, however, more active in combination with alcohol as ethyl esters, first prepared by POWER in 1904 and 1905, and first shown to be effective in a comparatively large group of cases by HOLLMAN and DEAN in 1919 in Hawaii, and at the present time 75 litres a month are being made at Culion for use in the Philippines. About 20 preparations containing these ethyl esters have been tested at Culion, and the addition of 0·5 per cent. iodine to lessen its irritant properties has been found best.

"A still more active form in which the chaulmoogra-group fatty acids can be used is that of the sodium salts. Using these, principally by intravenous injection, Rogers (1918) surpassed all previous workers in the effective treatment of a large group of cases. The gradual obstruction of veins caused by this treatment appears to be the main reason against its extensive use at the present time." The oil or ethyl ester homogenized in acacia solution is also very active, and can be used intravenously if sufficiently dilute, but so far has not given as favourable results as the non-emulsified drugs.

Oils other than the Chaulmoogra Group.—While the effectiveness of the chaulmoogra oils has long been known or believed in, "the discovery that entirely different oils can also be employed effectively was made recently by Rogers (1918)." The most important of these is cod-liver oil, the oral use not having been observed to be beneficial in leprosy but "intramuscular or subcutaneous injection, however, whether of the oil or its ethyl esters, has a marked effect, and the purified sodium soap (Rogers' "sodium morrhuate") is even more active." Linseed oil is more irritating, and has been little used, the derivatives of soya bean oil have been reported on somewhat favourably, these being partly unsaturated, but the very nearly saturated oils such as olive and coco nut oil have little effect in leprosy. At present about 1·5 litres of cod-liver oil with 10 per cent thymol are made monthly for use at Culion. It may therefore be concluded that the highly unsaturated fatty acids injected into the tissues have a definite effect on the disease, but the chaulmoogra group, which are not highly unsaturated, have the greatest effect when injected and also some effect orally, and this group has the advantage of continuing its efficacy until the symptoms have nearly or entirely disappeared; cases on the cod-liver oil preparations tend to reach an unprogressive stage after a few months treatment. At the present time 100 leprosy cases are being effectively treated for one so treated 8 years ago, and the scientific worker has a solid basis on which to build new progress, for recently at Culion acids have been synthesized with similar action and greater diffusibility, further marked advances are not impossible, and results already obtained "certainly give reason to believe that continued efforts within the next few years will succeed, not in eradicating the disease, but in relegating most of its horrors to the past." Further, "its main importance for the future is as a preventive measure" where segregation is impracticable, as in India, where already "treatment is the most important item on the eradication programme, and it is the only reasonable hope for the control of leprosy as a world problem."

L. R.

DE VERA Bonifacio. **The Effect on Leprosy of Certain Oils not in the Chaulmoogra Group.**—*Jl. Philippine Islands Med. Assoc.* 1925. Dec. Vol. 5. No. 12. pp. 374-378. [3 refs.]

The results of a few trials recorded in this paper are in accordance with those noted in the last paper and with larger trials of E. MUIR in Calcutta. Twenty-five cases with an average duration of 8 years were treated with cod liver ethyl esters and a series of 5 cases with soya bean, olive and coconut oils and their derivatives, and only the first two (cod-liver and soya) gave any marked or moderate improvement.

L. R.

RODRIGUEZ (Jose N.). **Brief Review of the Medical Work at Culion Leper Colony.**—*Jl. Philippine Islands Med. Assoc.* 1926. Feb. Vol. 6. No. 2. pp. 42-49. [20 refs.]

This interesting review opens with the cheerful but cautious statement: "It is now generally recognized that, with the present improved methods of treatment, arrest or definite improvement of the disease can be obtained in the majority of cases, and relative cure in many of the less-advanced and earlier ones," especially as it is based on the experience of 5,200 cases, nearly all fairly advanced ones, of whom 3,200 were continuing treatment with advantage at the time of writing, with an average duration of the disease of 7½ years. The methods have been sufficiently described in the preceding abstracts, so only the results to date need be given here in the words of the paper: "The results have been encouraging and progressive so far. At the end of March 31, 1925, 9·1 per cent. of the patients then under treatment were negative, 22·1 per cent. were markedly improved, 24·8 per cent. were moderately improved, 21·8 per cent. were slightly improved, 11·2 per cent. remained stationary, and 10·9 per cent. had become worse. The above figures do not include negatives who had already been sent to their homes. In all, 545 cases have been declared negative since 1922 up to August 15, 1925. Of these, 238 have already been paroled or discharged, 14 have died, 40 have returned positive before completion of their two-year period of observation in the colony, and 253 are still in Culion, completing their period of observation."

The great work done at Culion still has one serious defect, steps to remedy which are being taken, as revealed in the following sentence: "Fifteen per cent. of the children living at Culion with their parents have become lepers, and 27 per cent. more are showing suspicious signs of leprosy."

L. R.

CULION MEDICAL BOARD. **Leper Segregation and the Treatment of Leprosy.**—*Jl. Philippine Islands Med. Assoc.* 1925. Dec. Vol 5. No. 12. pp. 353-360. [1 ref.]

This valuable and timely series of papers on the Culion work may appropriately be concluded with the opinions of the whole Medical Board recorded in this paper. The right to segregate persons especially dangerous to public welfare is emphasized and its necessity is based on the disease being a contagious and particularly loathsome one, which may become epidemic in newly infected communities such as the Hawaiian and Loyalty Islands. Leprosy "in terms of human misery

is in a class by itself", it inspires remarkable popular fear, and the diseased become outcasts dependent on public care, so "it is important to reduce the numbers by taking charge of the leper before, not after, he has passed the infection on to others" and a relatively heavy expenditure to eradicate the disease may in the long run be more economical than making "permanent provision for the care of constant or increasing numbers of indigent lepers."

The improved treatment has led to the formation of a dual plan of caring for the segregated lepers by (1) assigning cases susceptible to effective treatment to Treatment Stations, with segregation of the sexes, situated in the principal leprous regions; and (2) sending on cases proving unamenable to treatment to the Culion Colony, where they live more normal and happy lives. The numbers there will be gradually reduced as negative cases are paroled or discharged, and by the effect of the normal death rate on its population until it is eventually closed; while the numbers at the treatment centres will be great at first as early cases are attracted, but will fall with recoveries and the reduced sources of infections and consequent number of new cases, the increased expense for a time being compensated by accelerated reduction of the total number of lepers in the Islands. Clinics for the treatment of early non-infectious cases on the Indian plan will also be started for cases found to be negative bacteriologically, while research to improve still further the treatment and early diagnosis will be pursued.

L. R.

DE MELLO (Froilano). Breves considerações sôbre o estado actual da Quimioterapia antileprosa (com impressões clinicas pessoais sôbre algumas das medicações preconisadas). **Present-day Views on the Treatment of Leprosy by Chemical Means.**—*Bol. Ger. Med. e Farmacia.* 1925. Mar.-June. 10th Ser. Nos. 3-6. pp. 62-82. [60 refs.]

This paper, which was communicated to the Portuguese Congress of Science held in Coimbra, is a general survey of the chemical treatment of leprosy. Various drugs are mentioned and extracts from reports in the literature of such are given, notably chaulmoogra oil and its derivatives, antimony, and arsenic in different forms. The author concludes: (1) That at present the hydnocarpates and ethyl esters of chaulmoogra constitute the best means of treating the disease; (2) That the active principles contained in chaulmoogra and allied plants are present in other animal and vegetable oils and that the destructive action of these on acid-fast bacilli would be a fruitful subject for investigation; (3) That antimony is of great help in leprosy; (4) That, in spite of good results recorded from the use of arsenic (parseno), the utmost caution is needed in its employment.

H. Harold Scott.

CHINA MEDICAL JOURNAL. 1925. Dec. Vol. 39. No. 12. pp. 1133-1135. **General Directions for the Treatment of Leprosy.**

This is a brief note summarizing the well-known treatment as advised by E. MUIR.

L. R.

TRAVERS (E. A. O.). **The Treatment of Leprosy at Kuala Lumpur, Federated Malay States.**—*Proc. Roy. Soc. Med.* (Sect. Trop. Dis. & Parasit). 1926. Feb. Vol. 19. No. 4. pp. 1-9. With 8 figs. [1 ref.]

This paper records further experience of the Chinese treatment of leprosy by oral administration of a powder consisting of :—

Hydnocarpus anthelmintica seed ..... 3 parts
Cannabis indica .... 1 part

half a drachm twice daily soon after food for adults and proportionately less for children, measured with a little aluminium cup, the mixture being made up fresh every week. *H. wightiana* seed was tried, but was found to be irritating to the stomach. Of 275 cases under treatment for over three months, 218, or 79·2 per cent., showed definite improvement ; during 1924 31 cases showing no remaining signs of leprosy were examined bacteriologically and 9 were found to be negative, while during the first eight months of 1925 of 27 examined 14 were negative after approximately two years' treatment, and of 200 cases, 81 per cent. were improved and 11·5 per cent. negative. If febrile reactions occur the treatment is stopped for a time, such reactions being followed by improvement. In only 2 per cent. did irritation of the kidneys ensue. The treatment is very popular among men, women and children, and occupies very little time—half an hour for 350 cases—and only costs three pence per month per patient, which will be reduced when systematic collection of the nuts is carried out. The general health improves. Photos of four cases before and after treatment show considerable improvement.

L. R.

DEFILLO (F. A.). Le traitement de la lèpre dans la République dominicaine. [**Treatment of Leprosy in the Dominican Republic.**] —*Presse Méd.* 1926. Mar. 20. Vol. 34. No. 23. pp. 363-365. With 7 text figs.

Situated at the eastern end of the island of Haiti in the West Indies this area has a hospital for 50 lepers not far from the capital, the cases being mostly nodular, for purely nerve cases are rare. It has been found that the addition of tannic acid enables larger doses of chaulmoogra oil from the Taraktogenos seed to be taken orally without digestive trouble, in the following prescription :—Fluid extract of American *Rhizophora mangle* 20 gm., Sassafras 5 gm., Rubus 5 gm., glycerine pure 5 gm., and oil essential of sassafras 10 drops. Five drops of chaulmoogra oil are given twice daily after food, and immediately followed by 25 to 40 drops of the foregoing mixture, the oil being increased daily by 6 drops without increasing the mixture until 50 to 100 drops are taken daily. Cod-liver oil may also be given as a tonic and to lessen the irritant action of chaulmoogra, and chaulmoogra, thymol and guiacol have been injected as well as other remedies. The results are said to be good, but no data are given.

L. R.

HASSON (James). **A New Method of Diagnosis and of Vaccine Treatment in Leprosy.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Jan. 21. Vol. 19. No. 7. pp. 349-354. With 6 figs. on 1 plate & 1 text fig. [20 refs.]

The writer first refers to his treatment of leprosy with amino-arsenophenol, which he claimed to be a rapid cure of leprosy, but which

after receiving some support has been found of little value by recent writers. Unlike most experienced workers, he discards chaulmoogra oil therapy as of little value, and claims success in a number of cases in which that treatment had failed by using "a stock vaccine—an autolysate—containing fifteen thousand millions of *Bacillus pyocyaneus*, and about five thousand millions of Hansen's bacillus to two cc. of physiological saline solution. The Hansen's bacilli are procured by a special method, and are taken from subjects suffering from Hansen's disease." The method of preparation is to produce blisters by the application of carbonic snow, which are emptied after 24 to 36 hours, and the sera thus obtained from a number of lepers are kept in an incubator for fifty days to three months at 36° C. only. The serum is prevented from coagulating by adding 2 per cent. sodium citrate, a mixed culture of *Bacillus pyocyaneus* is added, the whole centrifuged for 20 minutes and the bacilli counted and the vaccine put up in ampoules; the solution must be at least 50 days old. Photos of three cases showing great improvement are given, one case having been first treated by eparseno, while in the other two the vaccine treatment is stated to have been "consolidated" by injections of chaulmoogra or hydnocarpate. It is not therefore possible to say how much of the improvement is due to the vaccine, although it has long been known that vaccines made of lepra bacilli may bring about reactions with improvement.

L. R.

Row (R.). **Treatment of Leprosy by a Vaccine of Autolysed Tubercle Bacilli.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Jan. 21. Vol. 19. No. 7. pp. 407-410. With 4 figs. on 1 plate. [5 refs.]

Various forms of tuberculin have been in use in leprosy for some 35 years with little benefit, and the present writer brings forward yet another modification of this method, the vaccine consisting of autolysed cultures of tubercle bacilli which have been washed free of fatty substances by means of petrol ether. Three cases in which it was followed by improvement are recorded, weekly subcutaneous dosage being used for a number of months. Photos of two cases are given.

L. R.

Hirst (L. Fabian). **The Treatment of Leprosy: a Suggestion.**—*Ceylon Jl. Sci.* (Section D. Med. Sci.) 1925. Nov. 18. Vol. 1. Pt. 3. pp. 107-109. [5 refs.]

The writer refers to differences of results with chaulmoogra oil preparation in different places, and suggests that the value of the oils may depend on "a product of high energic chemistry" as defined by Prof. E. C. G. Baly, F.R.S., and that an oil may possibly be improved by certain light or sun rays.

L. R.

Puente (José J.) & Pierini (Luis E). Ensayo de tratamiento de la lepra por el tiosulfato de oro y sodio (Sanocrysina). **Sanocrysin in the Treatment of Leprosy.**—*Semana Médica.* 1926. Apr. 1. Vol. 33. No. 13. (1681). pp. 683-684. [5 refs.]

This is a preliminary communication on the use of Sanocrysin in leprosy. The initial dose was 0·025 gm. increasing gradually to 0·5 gm.

Five patients were treated, and all stated that they felt better, but this is attributed to auto-suggestion and the psychic effect of renewed hope of cure with a new drug. The following are briefly the results up to the present. No.1, Nodular form; total amount given 5·15 gm. Result, the nodules seemed to be a little flatter. No. 2. Anaesthetic form; total 5·40 gm. Result: anaesthesia less marked. No. 3. Mixed form; total 4·65 gm. Diarrhoea and weakness set in and no result is recorded. No. 4. Nodular form; 5·30 gm. given. Nodules continued to appear. No. 5. Macular form; 3·25 gm. in all. Diarrhoea, weakness, rise of temperature and loss of appetite, but many of the spots disappeared.

The general impression given, states the author, was that with the doses employed the results were nothing extraordinary.

H. Harold Scott.

BARGEHR (P.). Psychische Einflüsse bei der Behandlung der Lepra. [**Psychical Influences in the Treatment of Leprosy.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 6. pp. 756-759. [1 ref.]

Bargehr gives a vivid picture of the reappearance of hope and faith in a leper colony with the introduction of each new medication. The number of temporary objective improvements in various patients, obtained without exception in the early stages of the administration of a new cure, gradually subsides with the increasing disappointment. The author ascribes many of such temporary improvements totally or partly to the influence of suggestion.

W. J. Bais.

GUERRERO (G. Lobo). Tratamiento de la lepra en el lazareto de Contratación. [**Treatment of Leprosy in the Contratación Lazaret.**] —*Repert. de Med. y. Cirug.* Bogotá. 1926. Jan. Vol. 17. No. 4. (196). pp. 194-201.

Two forms of treatment of leprosy are here mentioned, namely with ethyl esters of chaulmoogra oil and with thymol by injection. The dose of the former was 0·5—1 cc. for children up to 12 years of age, 2 cc. for adults at the start, increasing generally to 5 cc, as a maximum, though some can take 10 and even 12 cc. The nodular form yielded more readily; in the nervous form the results were not so good. Two patients in an advanced stage of the disease improved wonderfully—the ulcers cicatrized, infiltration diminished, the general state improved and bacteria diminished in numbers and were seen to be disintegrating. Some patients complained of disturbance of vision, but this is ascribed to the disease and not to the treatment.

In treatment by thymol 5 cc. ampulles of "injectable thymol" in sterilized oil were used for intramuscular injection. The case of one patient, a man of 42 years, is detailed. He had suffered from the mixed form for 12 years; there were extensive patches of anaesthesia, ulcers on the legs and scattered nodules, with loss of fingers, facial paralysis, and so on. For the first three years he had no treatment; for the next six he took chaulmoogra oil by mouth in large does, up to 30 gm. daily. Later this had to be reduced, owing to gastric disturbance, to a maximum of 100 drops daily. During the last year he had 12 injections of the ethyl ester of chaulmoogra, followed by

60 injections of thymol in 5 cc. ampulles every third day, intramuscularly. Considerable pain lasting for several hours was produced, with paroxysms of coughing and dyspnoea, but the final result was satisfactory. The ulcers cicatrized, the infiltration and the nodules disappeared, as did also the maculae, and the sensation returned in some of the anaesthetic areas; examination of the nasal secretion has revealed no lepra bacilli.

H. Harold Scott.

CAVALCANTI (Ettore Catolla). Sopra un caso di lebbra. [**A Case of Leprosy.**]—*Riforma Med.* 1926. Feb. 1. Vol. 42. No. 5. pp. 114-117.

A very detailed account of a woman of 67 years, suffering from the mixed form of leprosy. There is nothing particular to note, and the case appears to have been deemed worthy of record because of the rarity of the disease in Gorizia. The patient had, however, resided also in Egypt, Arabia and Zanzibar.

H. Harold Scott.

MACARTHUR (W. P.). **Some Notes on Old-Time Leprosy: the Case of King Robert the Bruce.**—*Jl. Roy. Army Med. Corps.* 1926. May. Vol. 46. No. 5. pp. 321–330. [Refs. in footnotes.]

It is stated in text-books that "Robert Bruce died of leprosy in 1329." Colonel MacArthur examines the evidence and shows that this is a legend due to the error, probably malicious, of a nameless clerk. In contemporary records there is no suggestion that Bruce was a leper.

A. G. B.

MALARIA.

CHRISTOPHERS (S. R.). **Two Malarial Surveys connected with Industrial Projects in certain very highly Malarious Localities in India. Part I. Report on Malaria at the Assam Sugar Estates and Factories Ltd., Nalbari, Assam, 1921. Part II. Enquiry on Malaria, Blackwater-Fever and Ankylostomiasis in Singhbhum. Report No. 1.** *Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 343-362. With 2 maps and 2 charts in text. pp. 363-405. With 6 maps and 4 figs. on 1 plate.

Originally published as Government reports, these are now, on public demand, given a wider publicity.

Part I.—On gently sloping ground, 8 miles from the foot of the Himalayas, with a soil of 2 feet of black humus on sand, an annual rainfall of 100 inches, and a high subsoil water level, lies this estate. It is cut by large drains into quarter-mile square plots, which, in turn, are intersected by smaller drains. Since these 60-acre plots form economically worked units, and also hold the best soil, the staff has been housed on trimmings, which lie along swamp and stream in which breed *Anopheles listoni* and *A. minimus*. Small wonder that in this hyperendemic area the spleen index is 91 and the parasite index 81, that infection is nearly all with *P. falciparum*, that it is far higher in those having over, than in those having under, a year's residence, and that recruitment of the staff, European and Indian, is a most difficult matter. The main conclusions are that the Estate should never have been laid out (as it was) without adequate sanitary advice, and that the removal of habitations and factory to the sites which they ought to occupy, due attention being paid to the segregation of the expensive European Staff, is now perhaps economically impossible. It is, however, to be attempted. Christophers had the advantage of seeing Malcom WATSON's work in the F. M.S. before making this survey, but does not consider those methods likely to be locally practicable, although it will be remembered that WATSON, dealing with apparently similar land elsewhere in Assam, was of contrary opinion (this *Bulletin*, Sanitation Supplements, 1925, p. 14.). However, as Christophers notes, the possibility of lowering the subsoil water is an engineering problem. The extension to the coolie lines of the drainage methods employed for the cane is advised, but a prophylactic issue of quinine is not.

Part II.—This has already been considered (this *Bulletin*, vol. 21, p. 284 ; vol. 22, p. 396). As is the case in the last project, the economic, and largely preventible, handicap is greatly increased by the unhygienic layout of the bungalows and lines.

Clayton Lane.

SEARLE (A. C. Hammond). **Statistical Investigations with Special Reference to the Incidence of Malaria in Lahore Cantonments.**—*Jl. Roy. Army Med. Corps.* 1926. Mar. Vol. 46. No. 3. pp. 192-196.

In 1904 complete cessation of irrigation was effected in Mian Mir, with the gradual production of a " barely habitable desert in which life was plagued by vast and never ending clouds of dust raised by

every animal and vehicle." Was it worth while? Was malaria lessened? Were dust-caused diseases increased? The hospital admission figures are these :—

	Malaria	Simple Continued Fever	Total
1903	1006	60	1066
1904	507	77	584
1905	517	350	383
1906	236	238	478

The figures show the marked antimalarial value of an official order that nothing was to be returned as malaria unless plasmodia were found. Moreover, between 1904 and 1908 25,668 cases of malaria were treated as outpatients; deductions, made as usual from admissions to hospital, are valueless for that period. Stress is laid upon the totally inadequate drainage system and hope expressed that Colonel W. J. MACKENZIE's deep absorption pit may solve the malaria problem more effectively than did the laudably conceived notion of changing the place's name from Mian Mir to Lahore Cantonment.

C. L.

CATANEI (A.). Observations sur le paludisme des indigènes d'Algérie (la Reghaia 1924-1925). [**Malaria among Natives of Algeria, 1924-5.**]—*Arch. Inst. Pasteur d' Algérie.* 1925. Sept. Vol. 3. No. 3. pp. 215-226. [2 refs.]

The report covers 5 consecutive quarterly examinations—from the spring of 1924 to that of 1925—on 83 native children from 1 to 15 years of age. Each examination comprised a smear and 3 thick drops. The results are grouped in various ways in nearly twenty Tables, and a few are here collected. Only one species was recognized on each occasion, but over the series of 5 quarterly investigations the same child was found to display a species, other than that formerly discovered, on 10 occasions, *P. falciparum* and *P. vivax* twice, *P. falciparum* and *P. malariae* twice, and *P. vivax* and *P. malariae* 6 times :—

	Splenic index.	Mean palpable enlargement of spleen, by finger-breadths.	Parasite index.	Gamete index.
1924 Spring	66·6	3·2	17·4	11·5
Summer	72·7	3·4	20·5	10·9
Autumn	75	3·3	50	16·6
Winter	63·1	2·5	32·6	17·3
1925 Spring	63·3	3·1	30·6	14·2

P. falciparum was not however diagnosed unless crescents were seen. The relationship of enlarged spleen to the detection of parasites in the peripheral blood was as follows :—

	Enlarged spleen.		Spleen not enlarged.	
	Numbers examined.	Parasites detected.	Numbers examined.	Parasites detected.
1924 Spring	46	11	69	1
Autumn	53	13	73	2
Summer	45	23	60	6
Winter	29	12	46	3
1925 Spring	31	12	49	3

Enlargement was greatest with *P. malariae.*

C. L.

ARCHIVES DE L'INSTITUT PASTEUR D'ALGÉRIE. 1925. Sept. Vol. 3. No. 3. pp. 227-290. With 66 text figs.—Monographies des localités dénoncées comme palustres en Algérie. Etude épidémiologique et prophylactique du paludisme en 1923-24-25. [**Malaria in Algeria 1923-24-25.**]

The details of this report are of local interest only, but locally they must prove of great value now and in the future. Thirty-five localities have been surveyed. In each case the report, admirable in information and brevity, indicates the reason for the particular inquiry, the character of the population, the site of the village, the reservoir of the virus, the indices, the anopheline breeding places, and the hygienic measures required. In each case, too, there is a diagram showing at a glance the spleen and parasite indices, and in nearly all there is a map of the locality (including wadis, railways and roads) or a sketch showing the prevailing physical features, or both.

C. L.

MAZZOLANI (Domenico.). Grave risveglio della malaria a Tripoli-città. [**Intense Recrudescence of Malaria at Tripoli.**]—*Riv. di Malariologia.* Rome. 1926. Jan.-Feb. Vol. 5. No. 1. pp. 54-58. [English summary p. 112.]

"Known before the Italian occupation and aggravated in 1912-13, malaria had diminished progressively, and from 1921 until the middle of 1924 had practically disappeared from Tripoli and its suburbs; but in the second half of 1924 it again appeared, and increased in intensity in 1925 until entire families were stricken. This recrudescence can be ascribed to the impetus given to building under the Governorship of Count VOLPI, so that many new constructions arose near almost abandoned wells and reservoirs, breeding *Anopheles.* This had very grave results, among which was the abandonment of some houses and property. On September 21st, 1925, a sanitary ordinance against malaria was issued by the Municipality."

C. L.

VAN HOOF (L.). Le paludisme dans la région de Léopoldville. Epidémiologie, prophylaxie. [**Malaria in the Leopoldville District.**]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 79-91. [7 refs.]

In and about Leopoldville, of 512 children 397 had enlarged spleen, 173 showed schizonts of *P. malariae* and 220 of *P. falciparum*, while gametes of these species were present in 62 and 36 severally. In 72 splenomegalies no parasites were found at the first examination, and 83 children with parasites had no splenomegaly. Presumably the blood was examined in a single thin film. The parasite index varied from 48 to 93 and the spleen index from 52 to 94. Gametocytes were present in 17 to 19 per cent. of infections.

C. L.

VAN NITSEN (R.). L'index endémique de paludisme à Panda-Likasi. [**Endemic Index of Malaria at Panda.**] *Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 93-96.

Panda is, after Elizabethville, the largest centre of Katanga. As compared with figures by WAUTRAVENS for the latter, the relative malarial incidence is as follows :—

	Elizabethville.	Panda.
Spleen index	46·8	50·6
Parasite index	46	59·7
Percentage of		
P. vivax	97	76·5
P. malariae	0.4	23·4
P. falciparum	2·5	0

C. L.

DE VERTEUIL (Eric). **Some Observations on Malignant Tertian Malaria in Trinidad, B.W.I.** *Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Oct. 15. Vol. 19. No. 4. pp. 235-239. [2 refs.]

In Trinidad, isolated from the mainland by several miles of sea, clearance of undergrowth with opening up of the country has resulted in the gradual and simultaneous disappearance of subtertian malaria and blackwater fever, so that these are now limited to a few spots, where the diseases occur together. Although the studies of DARLING and others in Panama leave little doubt that *A. tarsimaculatus* and *A. albimanus* are there the local carriers of malaria, and although they form between 80 and 90 per cent. of local Anopheles, de Verteuil believes *A. argyrotarsis* and *A. maculipes* are the local carriers of subtertian malaria. His reason is that the clearance of undergrowth which eliminates malaria of that type has no apparent effect on the numbers of the first two species. Moreover, *A. argyrotarsis* is the common species on the adjacent Venezuelan mainland, which has the reputation of being a centre of subtertian malaria ; and in British Guiana, with a similar reputation.

The striking confinement of subtertian malaria to localities or houses was investigated in 13 cases, and it was noted in all that pigs were kept. Inquiry is being made as to whether pigs are susceptible to malaria, or whether *A. argyrotarsis* breeds in their footprints. Regarding symptoms, gastric and algid types are described in children and in adults. For treatment, intramuscular injection of quinine bihydrochloride, in dosage of 20 to 40 grains repeated in 6 to 8 hours, is advised, after which those surviving can usually continue the drug by mouth, the percentage of survivals being unmentioned. For vomiting, adrenalin, 5 to 8 minims by mouth or hypodermically, is strongly advised.

C. L.

DAVIS (Nelson C.). **A Field Study of Mountain Malaria in Brazil.**—*Amer. Jl. Hyg.* 1926. Jan. Vol. 6. No. 1. pp. 119-138. With 2 charts. [12 refs.]

" An examination was made of 201 persons living in railroad construction camps in the mountains near Andra dos Reis, State of Rio de Janeiro, Brazil. Thirty-nine infected individuals were found, of whom ten were gametocyte carriers.

"The predominant local anopheline mosquito was *A. bellator*, known in Brazil as *Anopheles* (or *Myzomia*) *lutzi*. In a series of over 400 stomach dissections of this species one cyst was found, in a mosquito captured while biting a *vivax* gametocyte carrier. More than 150 of the mosquitoes examined were known to have fed on the blood of gametocyte carriers. This mosquito, therefore, shows an extremely low grade of susceptibility to infection with *Plasmodia*.

"The presence in the locality of the following additional anopheline mosquitoes was verified:

A. eiseni (*A. tibiamaculatus.*)
A. (*Myzorhynchella*) *lutzi*, and
A. (*Cellia*) *argyritarsis.*

"It is suggested that the last named species is probably responsible for a large part of whatever new infections occur in the region. Much fever is attributable to relapses."

C. L.

PESSOA (S. B.) & PRADO (A.). Ligeiras notas sobre a malaria em S. Vicente. [**Malaria in S. Vicente, Brazil.**]—*Ann. Paulist. Med. e Cirurg.* 1925. Nov. Year 13. Vol. 16. No. 11. pp. 142-148. With 3 text figs. & 5 figs. on 1 plate.

Malarial mortality in S. Vicente, S. Paulo, Brazil, has greatly increased during the last 4 years, reaching, during the first 5 months of 1925, 28 in a population of 8,000. It affects the suburbs more than the city. *P. vivax* and *P. falciparum* are the parasites. *Anopheles argyrotarsis*, *A. allopha*, *A. tarsimaculata* and *A. pseudomaculipes* were affected. The spleen index reaches 45 per cent. Paris green was used as a larvicide.

C. L.

SCHÜFFNER. (W.). Het Eerste Internationale Malaria Congres te Rome. [**The First International Malaria Congress at Rome.**]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1926. Vol. 66. No. 1. pp. 66-79.

The author gives a condensed review of the material dealt with by this Congress (*ante*, p. 129). Further summarizing appears impracticable. Yet a few points deserve closer attention, especially because Prof. Schuffner refers to some results of personal contact of scientific workers during the congress.

Convincing argument was brought about for the recognition of a genuine form of blackwater fever, caused by Leptospira (Schuffner, BLANCHARD and LEFROUS, van HOOF). As these cases show a striking similarity to yellow fever, they may support BENTLEY'S opinion that yellow fever does occur in East Asia, but never leads to epidemics, because Stegomyia is not nearly so prevalent there as it is in Central America.

JAMES'S opinion, that malaria affects the healthy and strong equally with the weak and sickly, is confirmed, and the author accordingly denies any important influence of economical conditions on the prevalence of malaria (SERGENT).

NOCHT'S experiments are worth mentioning. He succeeded in inducing blackwater fever in dogs by quinine after preliminary treatment with an haemolytic amboceptor.

The price of quinine was a subject of discussion. Schuffner explained that the price cannot, for economical reasons, be less than about 60 gold francs per kilo.

The author appreciates highly the real international spirit which was noticeable during the congress.

W. J. Bais.

PITTALUGA (Gustave). L'état actuel de l'endémie de paludisme en Europe, les facteurs de sa variabilité, les moyens de les prevenir. [**Present State of Malaria in Europe.**]—*Semana Méd.* 1926. Mar. 25. Vol. 33. No. 12. (1680). pp. 626-629.

The influence of the recent Malaria Commission of the League of Nations, and particularly that of Colonel JAMES, seems to be potent here. The factors enumerated as causing variation in endemicity are : movements of the population, their agglomeration, modifications of their domestic and agricultural life, insufficiency of quinine, and famine. Measures of three kinds are advised : - Strengthening of the antimalarial service of troops on foreign service with a view to obtaining the better detection of infected persons, particularly of gamete carriers; close antimalarial scrutiny of new arrivals, whether as individuals or in mass, in endemic countries, with a view to preventing the introduction of fresh strains which will increase endemicity ; the collection of stocks of quinine in each country adequate for emergencies.

C. L.

GEMAYEL (Amin). La malaria en Syrie, autrefois—aujourd'hui. [**Malaria in Syria, Past and Present.**] *Presse Méd.* 1926. Feb. 17. Vol. 34. No. 14. pp. 219-220.

The writer contends that malaria was known in Syria and Palestine from the earliest times. He believes that Deuteronomy xxviii, 22, refers to malaria "The Lord shall smite thee with a consumption, and with a fever, and with an inflammation, and with an extreme burning." As linguistic evidence he cites the variety of Syriac terms covering quotidian, tertian, quartan and other forms of fever, the names of localities, and local literature, such as the words of Harès, the physician so extolled by the prophet of Islam himself. "An unhealthy land is one wooded and infested with mosquitoes which are the source of illness." Then there is the report of Abdullah Jabbour in 1884 as noted in "La Nature" "In my district of Racchaïa it is completely established that it is the mosquito which carries the poison of marsh illness."

C. L.

SWELLENGREBEL (N. H.) De reis der malaria-commissie van den Volkenbond naar Spanje, 13 Augustus—7 September, 1925. [**The Visit of the Malaria Commission of the League of Nations to Spain.**] - *Nederl. Tijdschr. v. Geneesk.* 1926. Jan. 30. Vol. 70. 1st Half. No. 5. pp. 424-431.

A comparison is drawn between the radical campaign carried out in the relatively wealthy Jewish colonies in Palestine and the methods of Spain, where the most rigid economy is essential and where the means employed are the treatment and retreatment of the human carriers of infection ; means rendered possible by the docility of the

people and by the relative absence of subtertian malaria. The first difficulty has been to bring medical aid to the poor and scattered population, and, in solving it, the question of malarial relief has become a part merely of the generally improved medical service. To this end the Central Malaria Commission of Spain—apart from its research side carried through by the National Hygienic Institute of Alphonso XIII and the Institute of Parasitology of the University of Madrid—has established antimalaria clinics staffed by specially trained health officers, by senior students as interns, and by students in training. In these clinics blood examinations are made, and from them treatments are given. The work has the stamp of an urgency measure, and the aim is to make permanent the present temporary benefits.

C. L.

PIPPIA (Giuseppe). Il reperto del parassita malarico nel sangue, durante il periodo interepidemico. **The Malaria Parasite Findings in the Inter-Epidemic Period.**—*Riv. di Malariologia.* Rome. 1926. Jan.-Feb. Vol. 5. No. 1. pp. 25-34. [English summary p. 111].

The author examined the malaria patients of a dispensary and of a school in Sassari, during the inter-epidemic period of 1924. The parasite index was reduced between January and May from 85 per cent. to 43 per cent. and rose abruptly with the reappearance of the epidemic. From March to May the benign tertian exceeded the subtertian form, although the latter predominated during the other months. Gametocytes were always present in smaller numbers than schizonts, except in benign tertian during the inter-epidemic period. Mixed infections were frequent (up to 8 per cent.). Cases of quartan were found, the existence of which during the inter-epidemic period has been denied. A high parasitic rate was noted with absence of febrile attacks in a young man.

C. L.

LANDRIEU (M.) & SENEVET (G.). Le paludisme à Mytilène ; relation de l'épidémie qui atteignit le corps d'occupation de cette ile en 1916. [**Malaria among the Forces occupying Mytilene in 1916.**]—*Arch. Inst. Pasteur d' Algérie.* 1925. June. Vol. 3. No. 2. pp. 132-137. With 1 text fig.

The conditions on that part of the Island of Mitylene occupied in February 1916 by 300 French troops were such that an outbreak of malaria was confidently expected, and recommendations were made that preventive quinine should be issued to troops and Greek refugees, unnecessary collections of water should be suppressed, the banks of the stream cleared of jungle, and a screened hospital prepared. In effect the matter ended with the issue of quinine to the troops only and that without supervision, except where commandants with colonial experience cleared the little patch of stream bank adjoining their own camp. In June the malaria cases began to come in, 22 in 15 days, when the writers were relieved of further local responsibility by their transfer elsewhere.

C. L.

PROCEEDINGS OF THE FIRST VOLGA MALARIA CONGRESS HELD AT SARATOV, 5-8 OCTOBER, 1924. (Pub. by the Saratov Govt. Dept. of Health : Saratov, 1924). 126 pp. [In Russian.]

The *Proceedings* contain the reports of delegates from the different provinces in the valley of the Volga. They deal with the incidence of malaria, the results of anti-malarial campaigns and clinical questions.

The Statistical Department of the Commissariat of Health records 3,200,000 cases of malaria throughout the republics (excluding Georgia) for the first seven months of 1924, as compared with 3,150,000 cases for the same period in 1923.

It is noted that, although the figures for the two years are almost equal, the geographical distribution of malaria changed considerably in 1924, a definite decline being observed in northern provinces, part of the central provinces and along the Volga, whilst in the Ukraine, S.E. Russia, the Urals and Siberia there was a considerable increase. The incidence of malaria in some localities for the years 1923 and 1924 is shown in the following table :—

Locality.	1923.			1924.		
*Yaroslavl Province	7,754	7	months.	2,307	7	months.
*Nijni-Novgorod ,,	89,705	7	,,	54,123	7	,,
*Kazan ,,	245,133	12	,,	158,673	7	,,
*Simbirsk ,,	113,935	6	,,	72,716	6	,,
*Samara ,,	373,780	7	,,	273,329	7	,,
*Saratov ,,	210,838	7	,,	142,336	7	,,
*Astrakhan ,,	65,405	6	,,	70,108	6	,,
Archangel ,,	14,027	7	,,	1,894	7	,,
Moscow ,,	102,234	7	,,	30,649	7	,,
,, (city only)	11,854	7	,,	3,344	7	,,
Ryazan Province	49,929	7	,,	25,503	7	,,
South Eastern region	252,652	7	,,	365,595	7	,,
Ukraine	143,885	7	,,	390,197	7	,,
Ural region	59,324	7	,,	271,884	7	,,
Siberia	140,612	7	,,	309,713	7	,,

*Localities marked with an asterisk are in the Volga region.

In the valley of the Volga malaria has always been endemic, but during recent years there have occurred particularly severe outbreaks. Attention is directed to the connection between poor harvests and outbreaks of malaria [this *Bulletin*, vol. 21, p. 291.]

The type of malaria prevalent in most of the provinces of the Volga was benign tertian, malignant tertian malaria occupying the second place, although in some districts (Simbirsk province) it was predominant. Quartan malaria was rarely observed.

There are several reports dealing with congenital malaria. In Tsaritsin LIACHOVETZKY discovered parasites in the blood of six out of eight new-born infants. LOPATIN reported eight cases from Saratov. The ages of the infants ranged from 10 minutes to 28 days, and in all cases the type of parasite in the infant corresponded with that found in the mother.

KITAEV ("On the parasitology, pathogenesis and treatment of comatose malaria") observed 58 cases of comatose malaria, of which 28 ended fatally. In all these cases the parasite was *Plasmodium*

falciparum (in four cases associated with *P. vivax*). The author recommends the administration of large quantities of quinine (4-5 grams during the first two days) subcutaneously.

TARTAKOVER ("Results of treatment of malaria by a combined method: Neosalvarsan—quinine") claims success in treating quinine-resistant cases by administering neosalvarsan at intervals during the course of quinine treatment.

SOLOMIN, in a paper "On the treatment of malaria in cases of idiosyncrasy to quinine", recommends intravenous administration of quinine, beginning with minimum doses (0·025 gram) and gradually rising to the maximum tolerated dose. It is claimed that this method leads to a gradual adaptation of the organism to therapeutic doses, provided the treatment be continued without interruption, since the adaptation acquired by the organism is liable to vanish rapidly.

C. A. Hoare.

DOBREITZER (I. A.). Die Verbreitung der Malaria in U.S.S.R. in Jahre 1925. **Distribution of Malaria in U.S.S.R. in 1925.**]—*Russian Jl. Trop. Med.* 1926. No. 1. German summary pp. 27-28. [In Russian pp. 11–14.]

Returns for the first nine months of 1925 show 4,242,070 malaria cases for Soviet Russia, as against 5,238,636 for the corresponding period of 1924. There have been increases in Azerbajdshan, Armenia, and White Russia. There has been one maximum in May and another in August-September, the latter mainly comprising subtertian and quartan infections.

C. L.

PAVLOVSKY (E. N.). **On the Appreciation of "Primariness" of Malaria for the Given Locality in Connection with the Outbreak of Malaria in the Outskirts of Leningrad.**—*Rev. Microbiol. et Epidémiol.* 1925. Vol. 4. No. 4. English summary pp. 129-130. [In Russian pp. 9-13.]

The writer concludes that in 22 cases of malaria which appeared in May and June, 1925, on the outskirts of Leningrad the period climatically suitable for anopheline development and incubation in man was too short to permit of infection having been local. All had reached Leningrad for the first time in the autumn of 1924, and had, it is concluded, arrived infected. A primary attack of malaria in a non-malarial community may be due to (1) Infection latent in an individual but first disclosing itself after his transference to a new locality, (2) Infection produced by transference of an infected mosquito to a new locality, (3) Infection by a mosquito locally infected in a new locality from an infected immigrant.

C. L.

ABRAMOW (A. W.). Zur Pathogenese der Malaria tropica auf Grund täglicher Blutuntersuchungen. [**The Development of Subtertian Malaria as shown by Daily Blood Examination.**]—*Russian Jl. Trop. Med.* Moscow. 1925. No. 1–2–3. German summary p. 71. [In Russian pp. 7–11.]

It is concluded that relapses depend, not on the biology of the parasites, but on the immune state of the body. Abramow has not

found gametes earlier than the end of the second week (on the average 17 to 19 days) of a first attack. See, however, Warrington YORKE, p. 554, infra.]

C. L.

DE BUEN (Sadi). Datos epidemiologicos contrarios a la unidad de los parasitos del paludismo. **Epidemiological Data Contradictory to the Unicity of Malaria Parasites.** —*Rev. Méd. de Barcelona.* 1925. Nov. Year 2. Vol. 4. No. 23. pp. 460–63. With 4 text figs.

Charts show that the lines indicating the monthly incidence of the different forms of malaria parasite may either be roughly parallel or may be opposite. That is to say, when the incidence of *P. vivax* lessens that of *P. falciparum* may either lessen or may increase. Moreover, the effects in Spain of treatment and prevention have been quite different for the three species, and that without making any difference in surroundings other than to lessen the numbers of mosquitoes.

C. L.

BOSCH (W. G.). Wederom *Cellia Kochii* de Overbrenger van Malaria. *Cellia kochii* **again in its Rôle as a Malaria Carrier.** —*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 6. pp. 760–765.

On a rubber estate the spleen index rose in one year from 6·9 to 27·1 in adults, from 7·4 to 32·6 in children. Similar figures for the parasite index were 2 and 13·3 : 7·4 and 36·5. Tertian and subtertian fever was met with. The epidemic was caused by *A. kochi*, of which species 10 of 268 specimens (3·7 per cent.) were found infected. No other infected Anophelines were found.

Experimentally, 86·6 per cent. of *A. kochi* could be infected with subtertian malaria. Catch drains on the rubber estate were found to be the favoured breeding place of the mosquito.

W. J. Bais.

KINGSBURY (A. Neave). **Some Investigations of Malarial Fevers.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Feb. 18. Vol. 19. No. 8. pp. 459–481. [34 refs.]

In view of the limitations of diagnosis by detection of parasites in the blood Kingsbury aims at a test, serological, biochemical, immunological, or cytological, which would be at least as reliable as are the Wassermann and Widal tests in their respective spheres. The reticulo-endothelium (Kupffer's cells) breaks down haemoglobin and eventually forms bilirubin which will accordingly be increased in the serum in all diseases accompanied by rapid destruction of red cells. This haematogenous bilirubin can be distinguished from bilirubin absorbed into the blood from obstructed bile ducts by Ehrlich's diazo reagent, as VAN DEN BERGH has shown. In obstructive bilirubinaemia the violet colour appears immediately : in the haemolytic condition its appearance is considerably delayed, sometimes so much so that the test appears negative. The test may be checked by VAN DEN BERGH's modification, in which all serum proteins are precipitated by absolute alcohol and the reagent added to the clear centrifugal supernatant fluid : in these circumstances both forms of bilirubin give an

immediate result; moreover, by employment of colour standards it is possible to express the quantity of serum bilirubin in units corresponding to parts per 200,000. The physiological content of bilirubin is generally regarded as 0·5 units, but the writer's figures in 40 normal native controls have varied from 0 to 0·4 units.

In malaria the serum bilirubin units have been as follows: Quartan malaria: average of 8 cases, 0·74; 37 per cent. being normal. Benign tertian malaria: average of 45 cases, 1·21 units; 9 per cent. being normal. Subtertian malaria: average of 97 cases, 2 units; 1 per cent. being normal. The units vary in general with the size of the spleen. The writer agrees with Langdon Brown that the test is not of great delicacy when applied to the estimation of liver efficiency, which is, of course, quite different from the use which he here advocates. One case of hepatic abscess showed 15 units, another 1·5, and in three of hepatic cirrhosis the figures were 0·5, 0·6 and 1·2.

Regarding the effects of quinine upon this reaction, the reasons are given which lead to the conclusion that the intravenous injection of quinine bihydrochloride causes considerable haemolysis in tertian and subtertian infections, and slight haemolysis in controls. After oral administration there was lysis in subtertian, but practically none in the other forms or in controls; a finding whose suggestive correlation with haemoglobinuria is noted. Under continued quinine treatment the serum bilirubin falls. It is pointed out that the anatomy of the spleen pulp is such that there is but slow diffusion through it of curative substances present in the systemic blood. Regarding urobilin and urobilinogen the experiments cited show that "Ehrlich's test for urobilinogen, when applied for the diagnosis of malaria, is...even less accurate than the finding of an increased output of urinary urobilin."

C. L.

Plehn (Albert). Immunisierung gegen Malaria [**Immunization against Malaria.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Vol. 30. No. 1. pp. 18-26. [4 refs.]

Plehn's views are these. Effective immunizing against an infection can only be carried out when a natural defence against that infection exists. In malaria this has generally been held to be absent, but observation of general paralytics shows that such view is not altogether correct.

Tertian malaria. Exceptionally a first infection may spontaneously become cured. An attempt at inducing a second infection is usually a complete failure, or, if temporarily effective, the infection rapidly disappears spontaneously, and that whether the first has been cured by quinine or has cured itself. A third infection almost never occurs, so that an immunity has definitely been acquired. The infection will, as a rule, be exterminated by three doses of quinine of 1 gramme each; in two cases it has been cut off in its incubation period by ingestion of 1·2 grammes of quinine on two consecutive days.

Subtertian malaria. The first attack may be fatal in spite of all care. Quinine does not cure but induces latency. Relapses are mild, but only rarely disappear spontaneously. Second and subsequent infections can be induced. Nevertheless by giving doses of quinine too small to have a therapeutic effect the infection may be so influenced that, by continuing and repeating these in conjunction with new infections, it becomes possible to inject intravenously, without ill effect, 2 cc.

of blood containing 10 to 20 per cent. of infected corpuscles; much more so to inject subcutaneously, as does the mosquito. The investigation of the matter is however one of difficulty since patients come to a hospital, not to acquire immunity to subtertain malaria, but to be cured of general paralysis. A cured tertian has no influence on the course of subsequent subtertian malaria. After a previously cured infection of tertian or subtertian malaria, the incubation period of a new subtertian infection may be only 24 hours—there seems to be a sensitizing effect, which corresponds with tropical experience.

The matter of antibodies was taken up. In opposition to the finding of LANGEN and ROSKOTT, the percentage of infected corpuscles was not materially lessened after defibrination, washing in Ringer's solution till free of albumin, and keeping for 24 to 48 hours at room, body or fever temperature. Instead of suspending such corpuscles in Ringer's solution they were removed to a corresponding quantity of serum from subtertian convalescents, who did, or did not, show circulating parasites. In one case the donor was shown to be immune—by lack of response to 2 cc. of intravenously injected subtertian blood. The infected corpuscles behaved in the treated just as they did in the untreated blood [serum ?] or when the suspension fluid came from one at the height of quinine treatment. There was then no evidence of any antibody in the blood. A weighty discussion followed. [The protocols on which these conclusions are based will doubtless be published. It will be noted that the tests are concerned with injected malaria alone, and it should not be assumed without evidence that they indicate the position for mosquito malaria.]

C. L.

STILES (C. W.) & HASSALL (Albert). **Key-Catalogue of the Protozoa reported for Man.**—*Treasury Dept. U.S. Public Health Service. Hyg. Lab. Bull. No. 140.* 1925. May. 67 pp.

Regarding the nomenclature of the malaria parasites, these writers, whose knowledge of the literature is unsurpassed, conclude that, whether the three species be placed in two genera or in one, the specific names should be *vivax*, *malariae* and *falciparum*. Regarding *Plasmodium vivax* and *P. malariae* there is probably no difference of opinion; the subtertian parasite will under these conditions be properly named *Plasmodium falciparum* or *Laverania falciparum*. It will no longer be necessary for those who place the three species in one genus to designate it *P. falciparum* and for those who place them in two to use the term *L. malariae*. The confusing distinction between *P. malariae* the quartan parasite and *L. malariae*, the subtertian parasite, will disappear, while the specific names *praecox* and *immaculatum* will lapse as synonyms. It is of great and obvious advantage that this nomenclature should be generally adopted, and the matter is brought to the prominent notice of medical men in the hope that uniformity in nomenclature may, by this means, be attained and confusion eliminated.

C. L.

HALL (G. Rome). **Malaria in West Africa in 1893.**—*Jl. Trop. Med. & Hyg.* 1926. Mar. 1. Vol. 29. No. 5. pp. 70-76.

An interesting personal contrast of the conditions and medical attitude to disease and its causation holding in West Africa 33 years ago and now.

In the old days, for instance, no white man ventured more than a few yards into the sun between 9 and 4 without an umbrella. This greater resistance to the sun is attributed "to the present day custom of taking 5 grains of quinine every day from landing to leaving."

C. L.

SARCHI (G.). Malaria im Narymschen Gebiet. [**Malaria in the Narym Region.**]—*Russian Jl. Trop. Med.* Moscow. 1925. No. 1-2-3. [In Russian pp. 21-24. 10 refs.]

In the Narym region (Tomsk Province, Western Siberia) the incidence of malaria was 1,750 cases in 1923 and 2,500 in 1924, all benign tertian; a higher figure is expected for 1925. *Anopheles maculipennis* was the only mosquito found in the course of 2 years. The population is mainly Russian, with an admixture of Ostiaks and Samoyeds.

C. A. Hoare.

TOMMASO (Lucherini). Tentativo di cura della leucemia con inoculazione di sangue infetto di "Plasmodium vivax." **An Attempt to cure Leucaemia by Inoculation of Blood containing** *Plasmodium vivax.*]—*Policlinico.* Sez. Prat. 1925. Dec. 14. Vol. 32. No. 50. pp. 1745-1747.

A child of 14 had a hard spleen overpassing the midline at the umbilicus by 2 fingerbreadths, an enlarged liver, many enlarged lymphatic glands reaching the size of a hazel nut, and a blood picture showing red corpuscles 1,500,000 with anicocytosis, poikilocytosis and nucleated forms, haemoglobin 25 per cent., leucocytes 250,000. Of the last, 73 per cent. were myelocytes. He received subcutaneously 3 cc. of blood containing *P. vivax.* After 12 attacks on alternate days blood examination showed: red corpuscles 1,200,000, haemoglobin 18, leucocytes 4,400. Half a gramme of quinine was given daily. About 2 months later the blood picture was:— red corpuscles 4,400,000, leucocytes 6,100 with a formula practically normal; the spleen was about half its previous size and softer; the general condition was much improved.

C. L.

WINKLER (Ludwig.). Zur Frage der autochthonen Malaria tropica. [**Autochthonous Subtertian Malaria.**]—*Med. Klin.* 1925. Dec. 11. Vol. 21. No. 50. pp. 1886-1889.

Discussing two cases, the second of which was certainly autochthonous, Winkler discusses the autochthonous cases of subtertian malaria reported in Germany and the percentage of all such cases which they form. Prior to 1922 there were none. Since then the numbers have been: 1922, 2 of 47, or 4·3 per cent.; 1923, 7 of 51, or 13·7 per cent.; 1924, 12 of 54, or 22·2 per cent. He stresses the effect of salvarsan in lighting up, perhaps fatally, a latent subtertian malaria.

C. L.

PATRICK (Adam). **Spring Relapses in Benign Tertian Malaria.**—*Ann. Trop. Med. & Parasit.* 1925. Dec. 16. Vol. 19. No. 4. pp. 387-389. [2 refs.]

A subtertian malaria, probably acquired in Bombay in October, was recognized definitely in the West of Scotland on 2nd December, and was treated by a 3 months' course of quinine. No parasites were detected on 7 examinations between 10th February and 8th March. Tertian

malaria appeared on the last date and relapsed twice. The case is published because the writer finds no reference to such events in text-books.

C. L.

GAGE (Alfred). **Algid Malaria.**—*Therap. Gaz.* 1926. Feb. 15. Vol. 50. (3rd Ser. Vol. 42). No. 2. pp. 77-81. With 2 charts.

"If a patient from a malarial district presents himself for treatment with a low or subnormal temperature, profound prostration, cold, clammy skin, anxious expression with eyes sunken, nose sharp and 'pinched,' with or without abdominal pain and rigidity, and with no evidence of severe trauma nor acute intra-abdominal disease, the attendant should not wait for a positive blood, but at once make at least a tentative diagnosis of algid malaria and begin treatment. If all medication is withheld until a positive blood is reported, the parasites will probably be found only at autopsy if at all."

In the five cases reported (from Guatemala) *P. falciparum* was invariably present; in one of them *P. vivax* as well. The treatment adopted has been a hot sponging in bed, followed by hot bottles. Quinine is given intramuscularly, and strychnine subcutaneously. The first quinine injection is of 15 grains, and others of half this strength follow at 6-hourly intervals, till the man can take 30 to 40 grains by mouth daily. "We do not give the injections in heavy doses, since from experience we know that if a large amount of quinine is administered at this critical stage in all probability the patient will not survive."

C. L.

TRABAUD. Des relations entre l'hémoglobinurie, l'hématurie, le purpura et l' ictère érythrophtorique au cours du paludisme de première invasion à propos de trois observations. **Haemoglobinuria, Haematuria, Purpura, and Haematogenous Jaundice in Primary Malaria: Three Cases.**]—*Revue de Méd.* 1925. Year 42. No. 3. pp. 179-186.

The writer describes 3 cases of primary malaria:—(1) with haemoglobinuria and haematuria without jaundice, with renal colic and subsequent pyelonephritis attributable to *Bacillus coli*, (2) with jaundice and haematuria, and superadded bacillary dysentery, (3) with jaundice and purpura. It is urged that disintegration of red blood corpuscles results in overworking of the liver in its effort to get rid of the freed haemoglobin, with consequent haemoglobinuria. The work of BARRATT and YORKE indicates that the phagocytic endothelial activity induced by destroyed erythrocytes sets free a haemolysin and a substance toxic to the vascular endothelium, the latter causing purpura.

C. L.

MCCONNELL (R. E.) & MCGILL (C. M.). **A Note on Corneal Ulcer in Malaria.**—*Jl. Trop. Med. & Hyg.* 1926. Jan. 1. Vol. 29. No. 1. pp. 3-4.

A man of 46 had two attacks, the first clinically malaria with high fever, the second with malignant tertian parasites detected, but with no note of the clinical condition. On the third day of the first attack,

and after the temperature had reached normal, the conjunctiva became inflamed, and a corneal ulcer was detected. He was in hospital for 6 days during the second attack, and 2 days after discharge the trouble recurred in the same eye. It is held to be herpetic.*

C. L.

MILLOUS (Pierre). L'hépatite scléreuse atrophique ascitogène métasplénomégalique paludéenne. [**Malarial Hepatitis.**]—*Paris Méd.* 1924. Aug. 16. Vol. 14. No. 33. pp. 141-147. [30 refs.]

Millous considers the claim of IONESCO and POPPER (this *Bull.*, Vol. 19, p. 582) that there exists a special type of malarial splenomegaly, characterized by atrophic cirrhosis with ascites and establishment of a collateral portal circulation, oedema of the lower limbs, anaemia and hepatic sclerosis of splenic origin. He considers a wide range of literature, points out the probability that the splenic blood runs mainly to the left lobe of the liver, the intestinal to the right, holds that the evidence indicates Banti's disease to be essentially malarial, and certain hepatic cirrhoses to be of splenic origin.

C. L.

AMOSOV (M. M.) & LINDTROP (G. T.). [**Acute Malarial Ataxia.**]—*Russian Jl. Trop. Med.* Moscow. 1925. No. 4-5-6. pp. 3-10. [6 refs.] [In Russian.]

Of a number of malarial cases with acute ataxia, 3 of the most typical are described. All had malignant tertian malaria (in one associated with *Plasmodium vivax*). The course of the disease, as determined by the blood picture, is divided into 3 periods. During the first period, which lasted 3-4 days, active manifestations of malaria with acute ataxia were persent; during the second period (5-7 days) there was improvement; the third is referred to as the latent period. Towards the period of convalescence mental depression and the disturbances of co-ordination gradually disappeared. Most of the cases were successfully treated with large doses of quinine (2 to 4 grammes *per diem*).

It is stated that in Azerbaidjan (S. E. Caucasus) cases of ataxic complication of malaria are not uncommon.

C. A. Hoare.

DEMIANOW (G. S.). [**On the Occurrence of Rash in Malaria.**]—*Russian Jl. Trop. Med.* Moscow. 1925. No. 4-5-6. pp. 11-14. [In Russian.]

The author describes a petechial eruption, chiefly sub-costal, which he has seen in 15 per cent. of 1,926 cases of malaria examined in 1923 in Northern Caucasus. The maculae were pink, similar to roseola, about the size of a millet seed, and irregularly oval in shape. They did not disappear on pressure. The rash usually appeared on the second day of the disease and in treated cases disappeared in about 7 days without leaving any trace.

C. A. Hoare.

* Colonel ELLIOT writes that superficial keratitis, commencing as herpes of the cornea, has been so widely recognised as a malarial manifestation that we may probably accept it with but little hesitation ("Tropical Ophthalmology," 1920, p. 452).

BUCKINGHAM (E. W.). **Transplacental Malarial Infection.**—*China Med. Jl.* 1925. Dec. Vol. 39. No. 12. pp. 1140-1141.

In each of two instances of congenital malaria the mother had a malarial history. In one child plasmodia were found in the blood before the placenta had been expelled. The other was a transverse presentation with prolapse of the right hand ; a blood smear was made from the prolapsed hand and "plasmodium malariae" detected before the child was born.

C. L.

WESELKO (O.). Untersuchungen ueber kongenitale Malaria. [**Congenital Malaria.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Feb. 1. Vol. 30. No. 2. pp. 73-75.

In 14 cases malaria parasites were found in the cutaneous blood of mother and child immediately after birth, or up to a period of 5 days thereafter. In 6, parasites were found in the placental blood, in 4 in the blood of the cord. Five died within 48 hours. All had spleens reaching at least 2 fingers below the costal margin. The first febrile attack might appear within a few days of birth, with convulsions in subtertian cases. Euquinine was effective in treatment.

C. L.

BRINDEAU (A.). Un cas de paludisme congénital. [**A Case of Congenital Malaria.**]—*Ann. Parasit. Humaine et Comparée.* 1926. Jan. 1. Vol. 4. No. 1. pp. 29-30. With 1 chart in text.

The mother was infected in Morocco at the third month of pregnancy, reached France at the sixth month, and bore her child at full term in Paris in February. The mother had malarial attacks on the second and fourth days after delivery. The child fell ill, evidently still in Paris, on the 24th day and P. *vivax* was detected on the 26th.

C. L.

ANNECCHINO (Francesco Paolo). Un caso di malaria congenita. [**A Case of Congenital Malaria.**]—*Riforma Medica.* 1926. Mar. 22. Vol. 42. No. 12. pp. 285-286. [24 refs.]

The child was born at Pozzuoli, described as non-malarious. The mother had malaria, but was untreated for fear of abortion. Parturition was easy. Forty-eight hours later the infant had convulsions, fever, palpable liver and spleen, the mother having a simultaneous attack. The conditions recurring 48 hours later, examination showed schizonts and gametes of *P. vivax* in the blood of both mother and child.

C. L.

DEMIANOV (G. S.). Ein Fall akuter gelber Atrophie der Leber bei Malaria. [**Case of Acute Atrophy of the Liver in Malaria.**]—*Russian Jl. Trop. Med.* Moscow. 1925. No. 1-2-3. pp. 1-6. [7 refs.] [In Russian.]

A male of 22, suffering from subtertian malaria and jaundice, died 2 days after being admitted to hospital in the Northern Caucasus. Post mortem examination revealed extensive necrosis of the liver with new formation of biliary ducts ; presence of leucin in the liver, and fatty degeneration of the kidneys and heart. The liver was not of the ochraceous yellow colour peculiar to the early stages of the disease, but brownish-red, owing to advanced necrosis and the development of blood vessels. The first attacks

of malaria had been succeeded by jaundice which lasted about 3 weeks. A relapse of malaria subsequently led to the development of acute yellow atrophy of the liver.

C. A. Hoare.

RAUL GOYENA (Juan). Cirrosis esplenohepática palúdica. (A propósito de un caso de hepatitis esclerosa atrófica, ascitógena, pigmentaria, anictérica, metaesplenomegálica.) [**Malarial Cirrhosis of Spleen and Liver.**]—*An. Inst. Modelo Clin. Méd.* Buenos Aires. 1924-25. Vol. 9. No. 1. pp. 247-254. [10 refs.]

The case is cited of a man of 45 who acquired malaria as a youth, had been a moderate drinker until, 15 years ago, he experienced an attack of formication and cramp in the left arm and became unconscious. He then gave up liquor. There was no history of syphilis. He came in with ascites, a liver margin one finger's breadth above and a splenic apex 7 breadths below the costal margin. Collateral circulation was evident. No malaria parasites were found. He went down hill, but was apparently alive at the time of writing.

C. L.

MAININI (Carlos.). Asthme et paludisme. **Malaria and Asthma.**] —*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1925. Dec. 3. 3rd Ser. Year 41. Vol. 49. No. 36. pp. 1514-1518. [3 refs.]; also *Semana Médica,* 1926. Feb. 18. Vol. 33. No. 7 (1675). pp. 328-329. [4 refs.]

In a man who had for 2 years suffered from asthma, latterly almost continuously, the discovery of crescents in 3 of many blood films lead to the exhibition of quinine by injections, presumably intramuscular, and by mouth. The effect is described as marvellous, so that by the sixth day all trace of asthma had gone. A formerly palpable spleen disappeared. There had been no recurrence of asthma up to two years later.

C. L.

VALERIO (Americo). Um caso de orchi-epididimite paludica. [**Case of Malarial Epidydimitis.**] —*Arch. Brasileiros de Med.* 1926. Jan. Vol. 16. No. 1. pp. 11-16.

A man of 28, malarial for 4 years with parasites formerly in the blood, without history or evidence of venereal disease or injury to scrotum, developed daily attacks of fever with testicular pain and fluid in the tunica vaginalis. He was treated by autoserotherapy (injection of the hydrocele fluid into the flank) and by quinine, and recovered.

C. L.

VON ENGEL (R.). Seltener histologischer Befund bei Malaria perniciosa synkopalis. **Unusual Histological Finding in Subtertian Malaria.**]—*Cent. f. Bakt.* I. Abt. Orig. 1925. Nov. 2. Vol. 96. No. 5-6. pp. 340-342. With 5 figs. on 2 plates.

The illness of a comatose man of 24, diagnosed as typhoid, was found on microscopic examination to be subtertian malaria with parasites in 32 per cent. of corpuscles in the peripheral blood, some containing as many as 4 rings. The pulse, it is emphasized, was 130 and very weak. He died shortly after an intravenous injection of 1 gramme of quinine bihydrochloride. The essential feature of a very complete post mortem examination was the packing of the vessels of the heart with infected red blood corpuscles, many with segmenting forms, while other organs were not specially affected.

C. L.

BONADIES (Antonio.). Su due casi di malaria atipica larvata. [**Two Cases of Atypical Masked Malaria.**] —*Giorn. di Clin. Med.* 1926. Feb. 28. Vol. 7. No. 3. pp. 99-103.

In a fairly elevated region, not considered malarial, a case occurred of intense pruritus with red patches, some as large as the palm of the hand, and appearing with a tertian rhythm. In another case intense dyspnoea supervened nightly for three nights accompanied by slight fever. In both the spleen was somewhat enlarged, and in both quinine effected a cure. Diagnosis rests upon the effects of this treatment.

C. L.

i. GHOSH (Nisanath). **An Unusual Case of Malaria.**—*Indian Med. Gaz.* 1925. Dec. Vol. 60. No. 12. p. 579.

ii. CHOPRA (S. L.). **A Case of Malarial Prostatitis with Reflex Retention of Urine.**—*Ibid.* p. 582.

iii. CHATTERJI (Khagendra Nath.). **A Case of Pernicious Malaria treated with Quinine intravenously.**—*Ibid.* p. 584.

i. Sudden unconsciousness with a temperature of 97° F. was found due to intense subtertian malaria. Parasites did not disappear from cutaneous blood until 8 grains of quinine bihydrochloride had been given intravenously every day for 6 days and 20 grains of "quinine" by mouth for 3 more.

ii. A heavy subtertian infection with enlarged and tender prostate and retention of urine cleared up under an "acid-cinchona" mixture. There was no evidence of gonorrhoea.

iii. Fever coming on daily with shivering, vomiting and diarrhoea, the last becoming haemorrhagic with collapse, recovered after 5 grains of quinine bihydrochloride and 10 minims of adrenaline solution given intravenously without blood examination.

C. L.

SINTON (J. A.). **Studies in Malaria, with Special Reference to Treatment.** Part I. **Introduction and Routine Methods.**—*Indian Jl. Med. Res.* 1926. Jan. Vol. 13. No. 3. pp. 565-577. [32 refs.]

——. Part II. **The Effects of Treatment on the Prevention of Relapse in Infections with** *Plasmodium falciparum.* —*Ibid.* pp. 579-601. [25 refs.]

——, assisted by RIVAS (B.), BAILY (J. D.) & DIWAN CHAND. Part. III. **The Value of "Provocative Methods" in the Diagnosis of Uncured Malarial Infections.**—*Ibid.* pp. 603-616. [27 refs.]

I. In these investigations exactness has been aimed at by the following procedure. Diagnosis was parasitic and, so far as possible, complications by other diseases were excluded. The drug was given by the mouth; the strength of the quinine solution was checked; its swallowing was determined by making the men talk. The Indian patients being convicts, ingestion of other drugs which might confuse the result could be excluded; the Europeans being soldiers, and very comfortable at Kasauli with its altitude of 6,000 feet, were little likely to take extra quinine with the misguided aim of an early return to their units in the plains. The three malarias were separately considered. The two populations were homogeneous. The number of patients treated in each instance was considerable. Control was effected by rigidly placing each alternate man, as he presented himself, either in a

control or in an experimental group. Every man was examined by thick film weekly (Sinton believing that for a trained worker the result is about as accurate as a daily examination of a thin film) for at least 8 weeks after the cessation of specific treatment, and, if fever occurred, at least once and usually twice daily until its causation was determined. Reinfection could practically be excluded at Kasauli. For prisoners the treatment was latterly so arranged that it began after the end of October, and that the 8-week observation period was completed by the end of February, the evidence being that infection is rarely acquired in the plains of the Punjab between those dates.

II. This section consists essentially in a checking of Sinton's quinine and alkaline treatment against other oral methods of cinchona alkaloid administration. This, it may be repeated, consists of

Sodae bicarb.	60 grains (4 grammes)
.. citrat.	40 grains (2·6 grammes)
Calc. carbon.	2½ grains (0·16 gramme)
Water to	1 ounce (28·4 cc.)
To be thoroughly shaken.	
Quin. sulph.	10 grains (0·6 gramme)
Acid. citric.	30 grains (2 grammes)
Magnes. sulph.	60 grains (4 grammes)
Water to	1 ounce (28·4 cc.)

In all cases 3 grains of calomel at night and an ounce of magnesium sulphate in the morning preceded the course of treatment. It was never found necessary to resort to other than oral administration of quinine. Vomiting could always be controlled by adrenalin hydrochloride (1 in 1,000) m.xx, repeated if necessary. An ounce of the alkaline mixture was given on the first day of treatment at 7.30, 9.30 and 11.30 a.m., and an ounce of the quinine mixture 20 minutes after the last dose. For subsequent treatment an ounce of the alkaline was followed by an ounce of the quinine mixture. The experiments are described in detail. The controls consisted of men taking the plain quinine mixture, as above, without the alkaline one. Combining 5 sets of experiments, the results are as follows :—

Drug.	Total.	Not relapsing, but observed for less than eight weeks.	Relapses observed *P. vivax.*	*P. falciparum.*
Quinine and alkali ..	281	40	23	38
Quinine alone ..	237	32	14	112
Cinchona febrifuge and alkali ..	119	14	2	41
Cinchona febrifuge alone	120	14	2	51

Quinine resistance has not been found. Even a patient with a history of taking over 2,500 grains of quinine during a period of 71 days, with 6 relapses in that time, retired defeated when subjected to a weeks' course of quinine and alkali under the fraud-eliminating conditions above described. "The evidence goes to show that an 8-week's observation period, with weekly blood examination by the thick film method, will reveal most, if not all, the uncured infections of *P. falciparum.*" None of the patients diagnosed before treatment as having mixed infections relapsed with *P. falciparum.*

III. Experiments made with strychnine as provocative agent in about 200 cases, as well as observations on some men injected with

typhoid-paratyphoid vaccine, and on others receiving intravenous tartar emetic for oriental sore, lead to the conclusion that these methods advantaged diagnosis little, or not at all.

These papers deserve better usage than the printer has meted out to them.

C. L.

Ross (Ronald). **The Treatment of Malaria in Britain.**—*Practitioner.* 1925. Nov. Vol. 115. No. 5. (No. 689). pp. 301-311.

Ross reviews for general practitioners in England his well known work on the proportional destruction of malaria parasites by each dose of quinine, and the basis which this affords for his 3-months' curative course of 10 grains of quinine sulphate orally each day. He particularly notes his experience that hookworm infection often retards the benefits of quinine.

C. L.

Seguin (T.). Du traitement du paludisme, maladie essentiellement curable. (4e communication). [**Treatment of Malaria, an essentially Curable Disease.**]—*Bull. Soc. Path. Exot.* 1926. Jan. 13. Vol. 19. No. 1. pp. 26-33.

Seguin returns to the curability of malaria by quinine (this *Bulletin* vol. 22, p. 810, etc.). He points out that his large dosage [about 50 grains a day for 3 days and 37·5 daily for another 7] is not extravagant, because, if not cured by one course of quinine, malarials will cost much more in drugs and loss of work. His emphatic insistence that a non-cured malaria is an ill-treated malaria serves to focus attention on the importance of his standpoint.

C. L.

Wirssaladse (S.). Zur Indikation der intravenösen Chininiinjektion bei Malaria. [**Indications for Intravenous Injections of Quinine in Malaria.**]—*Ztschr. f. Klin. Med.* 1925. Vol. 101. No. 3. pp. 320-330. [20 refs.]

The indications for intravenous injections of quinine are much as are advised by others; that is to say, pernicious attacks where many subtertian parasites are found in the cutaneous blood (due regard being paid to the fact that grave illness may supervene when but few parasites are to be found there), and when other forms of administration fail; also in all re-infections and in obstinate relapses, when the subsequent improvement may be striking.

C. L.

Fidao (G.). Note sur les injections intraveineuses de quinine. [**Intravenous Injections of Quinine.**]—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1. pp. 51-54.

Referring to some 2,500 intravenous injections of quinine reported by Cantlie and Moubarak (this *Bulletin*, vol. 21, p. 603) in which local reactions are unmentioned, Fidao reports some 600 of his own, and details the results of 159 others made upon 39 men. Each injection comprised 0·5 gm. Local reactions affected 20 per cent. of the patients

and accompanied 13 per cent. of the injections. The vein, after one or two days, became hard and painful. In two a transverse anastomosis appeared between the cephalic and basilic veins in the upper third of the arm. General reactions have been without permanent significance. It is concluded that in grave cases the intravenous is the method of choice; that in ordinary cases it is effective, but its choice is limited by these local accidents; that in chronic cases it may form a turning point in the cure, but the local reaction will constitute a disability to a man in work.

C. L.

SEIDELIN (H.). Injections intraveineuses de solutions concentrées de quinine. **Intravenous Injections of Concentrated Quinine Solutions.**—*Ann. Soc. Belge de Méd. Trop.* 1925. June. Vol. 5. No. 1, pp. 41-49. [11 refs.]

Intravenous injection of quinine, as quinoform or as the biyhdrochloride, was made 100 times as a test. The advantages, real or presumptive, of this method of administration are described as:—direct action in the blood (during the consideration of which point there is, it is pointed out, no evidence that quinine has a particular action on plasmodia in their extracorpuscular stages), painlessness and facility of administration without special apparatus. As objections are noted a case in which, circumvenous leakage producing no pain, the injection was persisted in, with subsequent necrosis and erysipelas; a constant temporary tachycardia; thoracic oppression; visual and other slight troubles; but particularly several cases of occlusion of the vein as noted by FIDAO, a circumstance used in the treatment of varicose veins, but which Seidelin has not seen emphasized in the literature in this connexion. Intravenous injection was not found to be a ready means of disinfestation.

C. L.

SHIRCORE (J. O.), CORSON (J. F.) & CLEARKIN (P. A.). **Experiments on the Administration of Quinine in Watery Solution and in Olive Oil.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1926. Feb. 18. Vol. 19. No. 8. pp. 485-487. [1 ref.]

Six experiments dealing with intravenous injections in olive oil of 0·38 to 0·68 grains of quinine sulphate per pound of body weight, eight dealing with similar injections in water of 0·1 to 0·28 (and one of 0·6) grains of quinine bihydrochloride lead to the conclusion that the latter is 2·6 times more toxic. Quinine was mixed with the olive oil by shaking in a shaker. The question of incorporation of air is not noted.

C. L.

CORDES (Wilhelm). Ein Beitrag zur Therapie der zerebralen Malaria. **Treatment of Cerebral Malaria.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Mar. 1. Vol. 30. No. 3. pp. 99-104.

The writer emphasizes the gravity of cerebral malaria, cites in his support the textbooks of CASTELLANI and MANSON, and offers for consideration 14 cases with 11 recoveries which occurred under the following treatment. As soon as malaria is microscopically established

as the cause of unconsciousness, 0·5 gm. of quinine dissolved in 10 cc. of water is intravenously injected, the process being gradual to avoid a drop in blood pressure. On account of the excitement induced the sick man must be restrained. As soon as the quinine injection is complete, the cisterna magna at the base of the brain is punctured, and as much cerebrospinal fluid as will flow is allowed to escape. This amounts to 50 or 60 cc. This process is held as easier and better than lumbar puncture because with the patient on his side the head can be held quite immovable on a hard pillow, because the fluid comes more readily, and because the cerebral pressure which represents 50 cm. of water is more rapidly relieved. If attention be paid to the moment when the needle pierces the dura mater, indicated by the overcoming of its resistance, the medulla is held safe. It must, of course, on no account be touched. The effect of this decompression is described as immediate and striking—muscles relaxed, breathing regular, normal sleep with generally a normal awakening next morning. If not, as occurred in two cases, the intravenous quinine and the puncture must be repeated. One of these two cases recovered.

C. L.

FLETCHER (William). **Further Notes on the Treatment of Malaria with Cinchona Febrifuge, Quinidine and Cinchonine.** *Bull. Inst. Med. Res. F.M.S.* 1925. No. 3. 21 pp. [13 refs.]

The present position of cinchona therapy is summarized. There is no world shortage of quinine, in the sense that there is cinchona bark available to a much greater extent than is being used. On the contrary, shortly before the war the market price had sunk so low that it hardly paid for cultivation, and an agreement was made between the planters and manufacturers to restrict the manufacture of quinine from bark, of which last there is a large surplus. The process of manufacture is expensive, so that most sufferers cannot afford to buy the drug at its present price. The cost, and not the need for the drug, restricts the demand. For two reasons it is not to be expected that in competition with Java quinine outturn can be economically successful. Firstly the quinine-rich *Cinchona calisaya*, and *C. ledgeriana* will not grow well in the Old World except in Java. Secondly the local experience in manufacture is unrivalled. But there is no need to restrict the horizon to quinine, for the other crystalline alkaloids of cinchona are, at least roughly, as effective as quinine. Now the hardy *C. succirubra*, although its quinine content is low, has a relatively high content of crystallizable alkaloids. The remedy is then to grow *C. succirubra*, and produce cinchona febrifuge, that is to say a preparation of the total crystallizable alkaloids. The objections to cinchona febrifuge are, partly the brown colour, partly its uncertain composition, partly its large percentage of amorphous alkaloid which FLETCHER, in definite opposition to PRAIN, holds to be toxic and malarially inert. The suggested remedy is the purchase by the Government of febrifuge in bulk once or twice yearly, and its sale in tablets, the container giving the certified composition of the substance.

Regarding the testing of effects:—There were in one hospital 15 men under treatment, each supposed to be taking 30 grains daily of quinine or of cinchona febrifuge. The urine of 5 only gave the quinine reaction. Fletcher has repeated his tests of cinchona febrifuge on malaria patients, using adequate checks. In dosage of 10 grains

twice daily the sample used was as efficient as quinine. Moreover on 36 men the effect of quinidine bisulphate in clearing the blood of malaria parasites was as good as or slightly better than the corresponding salt of quinine. As regards cinchonine, doses of 0·1 of a grain per lb. of body weight were as effective as and not more toxic than similar doses of quinine; but doses of 0·1 of a grain per kilo were less so.

C. L.

ASCOLI. Alcuni alcaloidi della china nella cura della malaria. [**Cinchona Alkaloids in the Treatment of Malaria.**]—*Policlinico.* Sez. Prat. 1926. Mar. 15. Vol. 33. No. 11. p. 370.

This research was undertaken at the request of the Health Committee of the League of Nations. The general results obtained are briefly published. The daily dosage varied from 1 to 2·5 grammes, the individual doses being 0·5 gm. repeated at half-hourly or hourly intervals. Quinine was eventually effective in all cases, although in grave cases apyrexia was not always obtained for 4 days. Neither resistance to, nor intolerance of, quinine were noted. Cinchonine was less effective, doses one third to one half greater being required to reach the same result. It was of Dutch origin and was thought to give less excellent results, and to be more prone to be followed by amblyopia and strangury than had previous batches obtained from the Italian Government or from England. Quinidine proved the most effective alkaloid, producing the effects of quinine in doses one third to one half less. Quinetum, or cinchona alkaloid, was as effective as quinine. The infections were with *P. falciparum.*

C. L.

CIUCA (M.), IRIMESCO (G.), MANOLIU (E.), ALEXA & CONSTANTINESCO. Essais comparatifs sur l'action thérapeutique de la quinine, de la cinchonine et du quinetum dans la malaria. [**Comparative Therapeutic Action in Malaria of Quinine, Cinchonine and Quinetum.**]—*Bull. Soc. Path. Exot.* 1925. Dec. 9. Vol. 18. No. 10. pp. 770-773.

Following the methods which the Malaria Committee of the League of Nations has adopted from the Medical Research Council of England, the writers, at the request of the Health Committee of the League, have investigated the action of "quinetum" and the sulphate and hydrochloride of cinchonine upon malaria parasites, using as a control the action of quinine bihydrochloride. Quinetum appears to be a cinchona febrifuge containing quinine 15, cinchonidine 35, cinchonine 25, quinidine 5, and quinoidine 20 parts. Dosage was as adopted by the Medical Research Council, namely 1 gramme daily per 70 kilos of body weight, continued for 5 days, in half-gramme doses, dissolved in water by aid of hydrochloric acid if necessary, and given orally. The treated numbered 372; they were given the drugs in strict rotation. At each dosage 3 thick drops and one smear of blood were taken and examined. The percentage which became negative after each dose, as well as those remaining positive after 10 doses, are noted in the accompanying Table. It would seem that crescents were unaffected by any drug and that, for trophozoits, cinchonidine was less efficacious than quinine or quinetum, particularly for subtertian malaria, clearing the blood of parasites within 5 days in only 12 to 18 per cent. of cases; whereas with the other drugs none were detected after this time.

CIUCA et al. Comparative Therapeutic Action in Malaria of Quinine, Cinchonine and Quinetum.

	Percentage of cases in which parasites disappeared after each dose.									Percentage in which parasites persisted.	Percentage in which gametes were absent at beginning of treatment.
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th		
Benign tertian Schizonts :—											
Quinetum	9·66	12·88	22·54	32·2	19·32	3·22	—	—	—	0·0	
Cinchonine hydrochloride	—	2·5	2·5	12·5	2·5	15	15	17·5	10	22·5	
,, sulphate	2·43	2·43	2·43	9·72	21·87	4·86	19·44	19·44	4·86	12·15	
Quinine bihydrochloride	6	22	21·8	20	19·2	7	4	—		0	
Benign tertian gametes :—											
Quinetum	9·66	3·22	16·10	12·88	19·32	9·66	3·22	9·66	9·66	0·44	
Cinchonine hydrochloride		2·5	-	5	10	—	20	7·5	10	45	
,, sulphate	2·43	—	-	4·86	7·29	17·01	4·86	4·86	14·58	41·31	2·43
Quinine bihydrochloride	—	5·45	11·25	25·05	15·05	15·25	9·45	3·65	1·65	13·25	
Subtertian Schizonts :—											
Quinetum	—	—	5·07	8·45	13·52	23·66	30·42	21·83	6·76	0	
Cinchonine hydrochloride	—	—	—		2·12	2·12	4·24	—	8·48	81·68	
,, sulphate	—		6·24	—	2·08	4·16	—	—	—	87·56	
Quinine bihydrochloride	—	2·23	2·23	10·59	36·13	23·3	9·01	6·01	—	0	
Crescents :—											
Quinetum	—	—	—		—	—	—	—	—	72·8	27·04
Cinchonine hydrochloride	—	—	—	—	—	—	—	—	—	78·44	21·2
,, sulphate	—	—	—	—	—	—	—	—	—	70·72	29·12
Quinine bihydrochloride	2·76	—	—	—	—	—	—	—	—	91·84	6·41

FOÀ (Gustavo). Annotazioni sull'uso della Cinconina nella lotta antimalarica durante la stagione interepidemica nell' anno 1924-25. **Remarks on the Use of Cinchonine in Antimalarial Work between Epidemics.**]—*Riv. di Malariologia.* Rome. 1926. Jan.-Feb. Vol. No. 1. pp. 3-24. [English summary p. 110.]

According to the English summary, cinchonine administered to 68 cases in the Pontine Marshes gave positive, but inconstant specific results, subtertian being resistant, crescents unaffected, and benign tertian malaria yielding only to doses larger than those of quinine. From the original it is, however, clear that quinine too failed in certain cases, that there were no controls, and that the conclusions may well be held unproven.

C. L.

SERGENT (Et.) & CATANEI (A.). Sur l'action de la quinine, de la cinchonidine et de la cinchonine données à faibles doses quotidiennes aux indigènes paludéens en Algérie. [**Action of Quinine, Cinchonidine and Cinchonine in Small Daily Doses on Malarial Natives of Algeria.**]—*Bull. Soc. Path. Exot.* 1926. Mar. 10. Vol. 19. No. 3. pp. 185-190. [1 ref.]

The writers have studied 47 malaria cases treated with 0·2 to 0·4 gm. of hydrochloride of cinchonidine, and 18 with that of cinchonine. The effects of the former are the more marked. Neither were so good as those of quinine.

C. L.

FOLEY (H.), CATANEI (A.), LE GUILLAS (L.) & BROUARD (M.). Sur la durée de l'action du stovarsol dans le paludisme chronique des enfants indigènes en Algérie. [**Duration of Action of Stovarsol in the Chronic Malaria of Native Children in Algeria.**]—*Bull. Soc. Path. Exot.* 1926. Feb. 10. Vol. 19. No. 2. pp. 96-100. [3 refs.]

This paper carries on observations already reported [*ante*, p. 133]. Five children have been closely studied with that care to ensure accuracy in blood examination which has already been noted. Stovarsol tablets were given for two periods of 8 days each, an interval of 10 days separating each period. The results are shown below :—

Case	Species of parasite.	Month.	Period of freedom from parasites.	Species of parasite appearing subsequently.
III.	*P. vivax* *P. falciparum*	May	2 months	*P. vivax*, later *P. falciparum*
IV.	*P. vivax* *P. falciparum*	May	5 months	*P. vivax* *P. falciparum*
V.	*P. vivax* *P. falciparum*	May	2 months and 20 days	*P. vivax*, later *P. falciparum*
VI.	*P. vivax*	May	1 month and 20 days	*P. vivax*, later *P. falciparum*
VII.	*P. vivax* *P. falciparum*	May	7 months	*P. vivax*

Another group of 18 infected children was watched by quarterly examination for 5 quarters, treated with quinine till no parasites were

detected, and watched by fortnightly examinations afterwards. Parasites reappeared and were present to the following extent on the dates noted: 8th December, 3; 15th January, 7; 15th February, 10; 1st March, 13. Since reinfection at that season can, it is felt, be excluded, these, and therefore presumably the stovarsol cases, were relapses.

C. L.

CIUCA (M.) & ALEXA (I.). Traitement de la malaria par le stovarsol. [**Treatment of Malaria by Stovarsol.**]—*Bull. Soc. Path. Exot.* 1926. Mar. 10. Vol. 19. No. 3. pp. 180-182.

Twenty-seven cases were treated by intravenous injection of sodium stovarsol in an initial dose of 0·25 gm., the daily quantity never exceeding 1·5 gms., and the total lying between 0·25 and 14·5 gms. There were 18 cases of infection with *P. vivax*, 1 with *P. malariae*, 6 with *P. falciparum* and 2 with the two last mixed. In 9 instances acute nephritis appeared. Schizonts of *P. vivax* disappeared after exhibition of 0·5 gms. of the drug but, unless the total quantity reached 1 gm., reappeared within 10 days. In no case did the splenic enlargement completely disappear. In the quartan case parasites remained unaffected by 3 grammes of stovarsol by mouth, but disappeared after a single intravenous injection of sodium stovarsol. On *P. falciparum* the drug had no effect at all. A daily examination, it is urged, must accompany stovarsol treatment, which must be replaced by quinine, as it safely may be, at the first sign of renal irritation.

C. L.

SPENCER (J. Heatly). **Á-Malairin in the Treatment of Chronic Malaria.** —*Jl. Roy. Army. Med. Corps.* 1925. Dec. Vol. 45. No. 6. pp. 456-459.

The active principle of A-Malairin is the glucoside of dioxydiamino-diphenyldiarsenide. It was given to 8 cases of relapsing tertian malaria in intramuscular injection of 1 cc. once a week for 4 weeks, followed by a second course 3 months later. In some of the cases quinine also was given. In no case did one course, at all events, cure. The cases were selected because quinine had failed to cure them. [No evidence of the absorption of this quinine is tendered.]

C. L.

SACCHETTO (Italo). Il solfuro d'antimonio colloidale nella terapia della malaria. **Colloidal Sulphide of Antimony in the Treatment of Malaria.** —*Giorn. di Clin. Med.* Parma. 1925. Dec. 31. Vol. 6. No. 18. pp. 681-691. With 3 charts in text.

In 3 cases, 2 of them relapses of *P. vivax* while in the third no parasites were detected, colloidal antimony sulphide, $Sb_2 S_3$, was intravenously injected in quantity of 14 cc. of a 0·253 per cent. solution at the rate of 1 cc. a minute. Four or 5 injections were given. The drug did not cure the malaria, but the colour index of the red corpuscles improved.

C. L.

OI (T.) **On the Effectiveness of Antimonids against Malaria.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1926. Feb. No. 251. English summary p. 4. [In Japanese.]

"The author treated 17 various malarial cases (5 of tertian fever, 2 of quartan fever and 10 of tropical malaria) with an antimonial preparation called Stibnal and recommends it as very effective against fresh infections with tertian fever, while its effect against tropical malaria is not so pronounced; but even in tropical malaria it has marked effect if given in combination with quinine; especially in chronic cases, which are not benefited by quinine alone, the combined treatment with quinine and stibnal is recommended."

C. L.

VAN DEN BRANDEN (F.). Le Heyden "661" ou antimosan dans le traitement de la Malaria. [**Antimosan in the Treatment of Malaria.**]—*Bull. Soc. Path. Exot.* 1926. Mar. 10. Vol. 19. No. 3. pp. 182–815. [1 ref.]

Antimony oxide attached to a complex aromatic radicle constitutes this addition to numerically advertising pharmacy. In 8 persons, schizonts persisted after a series of injections of 1 cc. each. The solution is neutral and painless. Controls were not instituted.

C. L.

MARTINDALE (W. H.). **Basic Quinine and other Alkaloidal Injections.**—*Lancet.* 1926. Feb. 27. pp. 455-457. [9 refs.]

"1. A formula for a reasonably concentrated solution of quinine salt (containing 12 per cent. of quinine base) is given which contains the quinine virtually in the basic condition. 2. In view of the work of H. Acton, T. A. Henry and H. C. Brown, and others, the quinine in this form should be more potent . . . Animal experiments show that mannitol-quinine* is practically no more toxic than a quinine acid hydrochloride solution of similar strength. 3. Mannitol-quinine may be suitable for hypodermic injection, and as such, or on further dilution, may be useful intravenously. 4. The solutions of the majority of quinine salts are distinctly acid, whereas mannitol-quinine has the advantage of being neutral, or only slightly alkaline. 5. Quinine salts (and mannitol-quinine) and other alkaloidal salts, on admixture with blood serum, yield the quinine and other alkaloids in basic condition to the serum, and mannitol-quinine shows a larger proportion, by experiment, of quinine base actually distributed. 6. It may be possible to utilise mannitol or glycerin on similar lines in the case of the borates of many other alkaloids."

C. L.

HUGHES (T. A.). **The Occurrence of Urticaria in the Treatment of Malaria by Quinine.**—*Indian Med. Gaz.* 1926. Jan. Vol. 61. No. 1. pp. 7-9. [6 refs.]

Two cases are reported. In the first, clinically malaria, no plasmodia were found. Twenty minutes after taking 10 grains of quinine in alkali, generalized urticaria appeared and lasted for 2 hours. Subsequent administration of quinine caused urticaria, when the drug was associated with bromide or calcium lactate, but not with adrenaline. After being so used, reversion to administration without adrenaline did not produce urticaria.

* Quinine base gm. 12, Boric Acid gm. 8·4, Mannitol gm. 7·5, Dist. Water cc. 100.

In the second case there was a history of generalized urticaria, appearing on the onset of any acute illness, and aggravated by quinine. When first seen, the blood contained numerous subtertian rings; urticaria was aggravated when sweating occurred and when quinine was taken. Adrenaline was ineffective to relieve, while 30-grain doses of calcium lactate appeared to do so. The rash disappeared on the fourth day, quinine being apparently persisted in.

C. L.

ADSHEAD (G. P.). **A Case of Acute Cinchonism.**—*Jl. Roy. Nav. Med. Serv.* 1926. Apr. Vol. 12. No. 2. pp. 145-147.

A man of 25 was admitted to hospital with complete blindness of 2 hours duration. *P. vivax* had been found and he had been given 200 grains of quinine sulphate, at first at the rate of 120 grains daily, with an equal quantity of potassium bromide. On admission he had diarrhoea and his blood contained *P. vivax*, the discs were pale, the retinal vessels contracted, and the pupils widely dilated and almost inactive to light. Later the discs became choked, and the retinal vessels dilated. In course of time vision became physiological and of high standard. Incidentally his mouth, in the early days, became extremely septic, and a parotid abscess developed.

C. L.

DUNDAS (J. D.) & TELANG (D. M.). **On the Inefficiency of "Mercurochrome 220" in the Treatment of Malaria.**—*Indian Med. Gaz.* 1926. Mar. Vol. 61. No. 3. pp. 116-117.

"Conclusions.—(1) Mercurochrome 220 has no effect on malarial parasites, even after 2 doses, as in cases Nos. 1 and 3, as shown by blood examination after the reaction following upon its administration.

"(2) Stomatitis and ptyalism were marked features in every case.

"(3) The drug appears to irritate the kidney tissue to the extent of producing mild nephritis, as was shown by examination of the urine in every case.

"(4) It will be seen that this much-vaunted drug, which has been hailed as a veritable panacea—especially by some American physicians—in malaria, does not in any way affect the dominant position of quinine as a specific for malaria."

C. L.

MORIN (Henry G. S.). Action de la quinine sur les schizontes de *Pl. malariae*. [**Action of Quinine on the Schizonts of** *P. malariae*.]—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 710-715. With 2 text figs.

The number of quartan parasites found in 200 fields of a fixed size was enumerated, and their disappearance under rest in bed and under quinine (1·5 gm. daily divided into three doses) were severally noted, an important matter since the marked effect of the former seems so often to be overlooked. An effort was then made, by enumerating the forms of different stages of the cycle, to determine whether quinine acted on intracorpuscular stages, on the principle that the vulnerability of each stage will be indicated by the order of its disappearance. The counts of the different stages are charted, but since it is not stated whether the infections were single, nor to what period of the cycle the various parts of the charts apply, it is difficult to appraise the

result. It is at least certain that quinine caused an immediate lowering of the number of circulating parasites, and that they had almost disappeared on the third day of treatment.

C. L.

ROBINEAU (M.). Dosage instantané de la quinine dans l'urine à l'aide d'une échelle opacimétrique étalonnée. [**Prompt Quantitative Determination of Quinine in Urine by means of a Standardized Opacimetric Scale.**]—*Bull. Soc. Path. Exot.* 1925. Dec. 9. Vol. 18. No. 10. pp. 773-774.

Urines are arbitrarily divided into 6 shades of colour. For the making of a permanent scale these are simulated by "glyzine" solutions of varying strength. For the same purpose the opacity of Tanret's reaction is obtained by adding milk, and the whole is then solidified by gelatin and sterilized. The opacities obtained correspond to quinine strengths of 1/10,000, 1/20,000, 1/50,000, 1/75,000, 1/150,000. There are then 30 tubes, and against one of them the quinine content of the urine is immediately determined.

C. L.

COCHRANE (T. S.) & ALLEN (G. V.) **A Rare Form of** *Plasmodium vivax.* —*Kenya Med. Jl.* 1926. Mar. Vol. 2. No. 12. pp. 344-345.

A European infant, living 8 months in Nairobi and Thika, 3 in England and 2 in San Remo, Italy, where he was bitten by mosquitoes, was ill for the first time in his life on reaching Kenya at 16 months old. Of the parasites found 92 per cent. were, to Leishman's stain, typical of *P. vivax.* The rest are described thus :—

"The parasites were roughly oval in shape with regular outline. The protoplasm stained a uniform fairly deep blue except around the nuclear body, where there was a well-defined narrow area of protoplasm staining a lighter blue. The nuclear body was situated to one side, the chromatin staining deeply. Fairly coarse pigment-granules were scattered uniformly throughout the more intensely staining protoplasm, but were not present in the lighter area around the nuclear body. The parasite was solid. The host cells showed a slightly greater enlargement than was shown by the cells invaded by the typical parasites. Well developed Schuffner's dots were present in the host cells."

They are held to be identical with those shown in THOMSON and WOODCOCK's section of BYAM and ARCHIBALD's "The Practice of Medicine in the Tropics," vol. II. p. 1,540, and Pl. LXIV, figs. 54 to 57.

C. L.

DELAMARE (G.) & DJÉMIL (Saïd). Formes anormales de *Plasmodium vivax.* [**Abnormal Forms of** *P. vivax.*]—*C. R. Acad. Sci.* 1926. Jan. 11. Vol. 182. No. 2. pp. 178-180.

That the infection was with *P. vivax* is held established by the tertian periodicity, by the general hypertrophy of erythrocytes, by the presence of Schuffner's dots, by the character of the rings and the absence of small ones, and by the absence of crescents. The host was an apyrexial pregnant woman. Nuclei were spherical, star-shaped, pear-shaped, boat-shaped, or like a straight or bent rod. Multiple nuclei were alike or dissimilar.

C. L.

LAL (R. B.). **The Relative Number of Male and Female Crescents. (Preliminary Note.)**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 265-270. With 1 chart in text. [3 refs.]

Counts of 4,600 crescents from 25th September to 17th December, and the plotting upon the same chart of observations by others, leads to the suggestion that the ratio of male to female crescents (varying from 1 to 10 in KNOWLES's reported cases to 1 to 1·07 in one of LAL's cases) is a seasonal matter. For the portion of the year covered, the highest percentage of males is in October and the lowest in December.

C. L.

IOFF (J.). Ein Versuch der Kultivierung der Malariaplasmodien. [**The Cultivation of Malaria Parasites.**—*Russian Jl. Trop. Med.* Moscow. 1925. No. 1-2-3. German summary pp. 71-72. [In Russian pp. 25-32. With 1 plate. 12 refs.]

"*Plasmodium immaculatum*" was cultivated 16 times, *P. vivax* 4 times and *P. malariae* once. Increase in the quantiy of dextrose advised by BASS gave negative results. Omission of the centrifuging of the blood and of the removal of leucocytes did not disturb development. Anaerobic conditions were found to be unnecessary, for development took place as, or more, readily when the layer of serum was only 2 to 4 mm. high—indeed, on shaking the tube so that the whole showed the colour of oxyhaemoglobin, development took place throughout the culture, and not merely in the upper layer. During the first 24 to 48 hours the reaction of the culture changes from weakly alkaline to neutral or weakly acid. For "*P. immaculatum*" the pigment collects very suddenly. The parasite lies in the periphery of the corpuscle. Division into 16 to 18 merozoits takes place at any period up to 6 days.

C. L.

MIKELADSE (Sch.). Zur Frage der Viskosität und Gerinnungszeit des Blutes bei Malaria. [**Viscosity and Coagulation Time of the Blood in Malaria.**—*Nachrichten der Universität.* Georgisch. 1924. Vol. 8. p. 169. [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Feb. 1. Vol. 30. No. 2. pp. 87-88.]

The viscosity of the blood is lessened in 83 to 85 per cent. of infections with any of the 3 species of malaria parasite, particularly in severe attacks and in subtertian malaria. The lowest point is reached during sweating; treatment raises it. Viscosity of the serum is normal in 71·43 per cent of cases. Clotting, during apyrexia, is normal in 40 to 45, accelerated in about 32 and delayed in about 26 per cent. of cases. During fever it is generally accelerated.

C. L.

BOREL, PONS, ADVIER & GUILLERM. Cholesterinémie et glycémie dans le paludisme en Cochinchine. [**Cholesteraemia and Glycaemia in Malaria in Cochin China.**—*Ann. Inst. Pasteur.* 1926. Feb. Vol. 40. No. 2. pp. 152-160. [10 refs.]

The blood tests for cholesterin and glucose are described. The normal quantity of cholesterin in serum in France is placed by GRIGAUT as 1·65 grammes per litre. In Cochin China it is less in malaria cases, irrespective of age or race, but not of sex, for in females the average

was 1·13 grammes and in males 0·83 For *P. falciparum*, *P. vivax* and *P. malariae* it was 0·93, 0·89 and 0·9 respectively. One of the smallest values was that of a *P. vivax* case drawn when the temperature was 40 C. For glucose, GRIGAUT's normal figure is about 1 gramme per litre; for Cochin China it is 0·69. In *P. falciparum* it has reached 4.35, and for *P. malariae* the average was 0·7. In most malaria cases glucose and cholesterin diminish together.

C. L.

BIGNAMI (A.). Quelques observations sur la pathologie du paludisme. [**Remarks on the Pathology of Malaria.**]—*Semana Médica.* 1926. Feb. 25. Vol. 33. No. 8. (1676). pp. 424-426.

It has been maintained that certain inflammatory lesions found in malaria must be of malarial origin because no other micro-organism has been found. Epidemic meningitis, it is pointed out, has this feature. The lesions of malaria, it is insisted, are not inflammatory; they are necrotic and proliferative. In the brain, for instance, round an arteriole blocked with parasites and pigment, lies a necrotic area surrounded by a ring of haemorrhages from surrounding vessels. Such lesions may be found in the part of the brain where they would be expected from the symptoms during life. Tumours of liver and spleen are not inflammatory. An acutely enlarged liver shows: first, congestion with some necrosis of the parenchyma; then, a perilobular melanosis; by repetition of the process, some increase of interlobular tissue; on recovery, abstraction of pigment; in cachexia, atrophy from progressive anaemia. Inflammatory lesions, if present, can only be due to some cause other than malaria.

C. L.

MÜHLENS (Peter). Transportables Malaria-Laboratorium für Expeditionen. [**A Portable Malaria Laboratory.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Apr. 1. Vol. 30. No. 4. pp. 166-169. With 3 text figs.

The writer describes and illustrates a portable laboratory fully equipped for malarial, epidemiological, and entomological research, and packed in two boxes each weighing less than 30 kilos. Each is a man's load, the two are a mule load, and the packages can be taken as hand luggage on train or by road. They are made by F. Bergmann (Leitz), Berlin.

C. L.

YORKE (Warrington). **An Address on the Malaria Treatment of General Paralysis of the Insane.**—*Lancet.* 1926. Feb. 27. pp. 427-431. [17 refs.]

This paper deals partly with GERSTMANN's recent monograph [*ante*, p. 496] and partly with the author's work already abstracted [this *Bulletin* vol. 22, p. 50; vol. 23, p. 148]. Of 400 general paralytics, treated by *P. vivax* infection at Vienna previous to 1923, and so with at least 2 years of subsequent observation, 33 per cent. showed complete mental remission—that is to say cure—15 per cent. partial remission, and 52 per cent. slight change, no change, or death. It is at

present impossible to forecast individual mental prognosis ; in general the earlier the treatment the better ; more value attaches to clinical manifestations than to body fluid reactions. The first effect of malarial treatment is evidently an acute increase in the infiltrative and proliferative processes which have occurred in the vessels and glia. Thereafter the infiltration lessens till, after years of mental remission, the lesions may become so slight that a diagnosis of general paralysis could not be based on them.

Regarding malaria, Warrington Yorke emphasizes the following points in his own work : the untenability of the unicity theory ; the appearance of gametes either, but very rarely, as soon as trophozoits, or at all events 2 or 3 days later ; the failure of quinine as a prophylactic and destroyer of sporozoits ; the easy cure of these primary cases ; the suggested mechanism of cure , the dangers of over-administration of quinine.

C. L.

NONNE (M.). Meine Erfahrungen ueber die Malaria-Behandlung der Paralyse. [**Experiences of the Malaria Treatment of G. P.**]—*Med. Klin.* 1925. Dec. 4. Vol 21. No. 49. pp. 1829-1832. With 3 text figs. [41 refs.]

Those investigated numbered 450 paralytics and 30 tabetics. Although a quartan infection was used, the main agent was the tertian parasite. In four cases it became contaminated by *P. falciparum* on passage through one who had been in the tropics. All four died. Marked insistence is accordingly expressed that none should be used as a donor who has been in the tropics, that daily blood examinations must be made, and that none should be discharged until free from observed parasites for three weeks. As usual [and in contrast to MRAS's cases, *vide infra* p. 556] the clinical manifestations were most varied, so that while one had high fever and collapse, another's fever ran a mild course. The nervous betterment was not necessarily proportional to the height of the fever. NONNE notes that, for those with little resistance, WAGNER VON JAUREGG divides the malaria treatment into 2 phases with some weeks interval, or lowers the temperature with a single dose of 0·25 gm. of quinine, and uses intra-cutaneous injection whereby the quotidian type of fever is avoided.

C. L.

KAUDERS (Otto). Zur Technik der Wagner-Jauregg'schen Malaria-therapie in der Praxis. Ueber Malariablutkonservierung. [**The Technique of Wagner-Jauregg's Malaria Therapy. Preservation of Malarial Blood.**]—*Seuchenbekämpfung.* 1926. Vol. 3. No. 1. pp. 18-23. [11 refs.]

While noting that finality has not been reached on the matter, the three following methods of preserving malarial blood in a condition fit for travelling are described.

i. *Sodium citrate.*—In a test tube, malarial blood (5 cc.) is mixed with an equal quantity of 0·5 per cent. sterile sodium citrate solution.

ii. *Blood agar.*—In a small flask, malarial blood (10 to 15 cc.) is defibrinated with glass beads and decanted into a test tube holding a fresh, thoroughly mixed, blood agar slope, in amount which will not overtop the slope.

iii. *Gelatin.*—In a test tube, malarial blood (2 cc.) is mixed with 10 cc. of Merck's purest gelatin—which melts after a few minutes in a water bath at 30 C.—and is shaken strongly for some minutes. The whole will solidify in a few minutes on ice, or in 15 to 30 minutes at room temperature.

In all cases the tube is not filled, is closed by an indiarubber cork, and sealed with melted paraffin. Carefully packed, the tubes are sent by post. For injection the citrated blood is taken direct into a sterile syringe. Agar blood is poured into a glass dish and the upper layer drawn into the syringe, so avoiding blocking the needle by minute detached particles of agar. Gelatin blood is melted throughout at 28° C, *and no more*, and carefully mixed. Subcutaneous injection, with scarification, is used.

C. L.

O'Leary (Paul A.), Goeckerman (William H.) & Parker (Stephen T.). **Treatment of Neurosyphilis by Malaria. A Preliminary Report.**—*Arch. Dermat. & Syph.* 1926. Mar. Vol. 13. No. 3. pp. 301-318. [23 refs.]

Of 22 general paralytics infected intravenously or intramuscularly with *P. vivax*, 25 per cent. showed complete remission, returning to their former occupations within 2 months of cure of the malaria; 37 per cent. were improved. One man died from the malaria, and one from convulsions 6 months later. In 4 cases the malaria ceased spontaneously; in two the first injection failed to produce evident infection although the second did so. The treatment was 2 courses of quinine lasting a week each, and consisting of 2 five-grain doses daily, followed by 2 similar courses of 3 days duration, a quinine free week separating each course. Apparently no relapses occurred.

C. L.

Mras (Fritz). Ueber den Verlauf der Impfmalaria. [**The Course of Inoculation Malaria.**]—*Wien. Klin. Woch.* 1926. Jan. 21. Vol. 39. No. 4. pp. 101-102.

A hundred cases of malaria conveyed by injection (generally subcutaneously, later in combination with scarification, and occasionally intravenously) gave incubation periods of from 2 to 12 days. Great stress is laid upon the extraordinary regularity with which a 41-hour interval was established from maximum to maximum, so that when pinned below one another the curves on the charts corresponded, the periodicity being tertian. Only on 3 occasions was it quotidian and even then, by dying out of one generation, it became tertian. In 52 per cent. of the cases, spontaneous cessation of fever occurred, on the average after 8 attacks, either suddenly or gradually, not to reappear even after provocative injections of sodium nucleinate. Two grammes of quinine divided between 4 intravenous injections was followed by no relapse.

C. L.

Fribourg-Blanc (A.). Le traitement de la paralysie générale par les chocs infectieux (paludisme, fièvre récurrente). [**Treatment of G. P. by Malaria and Relapsing Fever.**]—*Paris Méd.* 1925. Dec. 5. 15th Year. No. 49. pp. 484-492. [35 refs.]

For the benefit of French medical men (only 85 cases of the treatment of general paralytics by malaria in France had hitherto been reported)

Fribourg-Blanc makes a valuable résumé of facts well known to readers of this *Bulletin* and records 4 cases. The deliberate carrying over of malaria by mosquitoes, the practice in England, is not mentioned.

C. L.

MARIE (A.). Rapport sur la malariathérapie en psychiatrie. [**Malaria Therapy in Psychiatry.**]—*Semana Médica.* 1925. Dec. 31. Vol. 32. No. 53 (1668). pp. 1641-1650. [79 refs.]

This paper has little of malarial interest, but for the scientific worker the historical introduction is pregnant. In 1836, ESGUIROL drew attention to the connection between intercurrent fever and the cure of chronic mental cases. In 1857 BAILLARGER showed, at the Académie de Medécine, general paralytics cured by erysipelas or phlegmon. In England it was shown that non-suppurative aseptic inflammation did not cure general paralysis. In 1887, WAGNER VON JAUREGG considered the possibility of curing these cases by erysipelas or malaria, in 1904 he employed pyretic agencies, not necessarily microbic or infectious; in 1917 he returned to his idea, struck by researches of MATTAUSHEK and PILCZ on 4,134 syphilitic Austrian officers of whom 4·7 per cent. became paralytic, but in no case had this occurred where there had been intercurrent erysipelas or any other febrile malady. It is to this steady pursuit of a reasoned idea that mankind owes a completely altered outlook for the general paralytic and a marked advance in malarial knowledge.

C. L.

DREYFUS (G. L.) & HANAU (R.). Ueber Fieber-, insbesondere Malariabehandlung der multiplen Sklerose. [**Malaria Treatment of Multiple Sclerosis.**]—*Deut. Med. Woch.* 1926. Feb. 26 & Mar. 5. Vol. 52. Nos. 9 & 10. pp. 354-356; 391-394. [1 ref.]

Twelve cases were treated with a tertian strain which had run through 60 passages. Except for one case, intramuscularly injected, with an incubation period of 14 days, infection was transferred by intravenous injection of 2 to 5 cc. of infective blood, with an incubation period between 4 and 11, generally between 5 and 7 days. Quotidian or tertian manifestations appeared, irrespective of the donor's type of fever. It is held that fever may be checked, if desired, for periods up to 9 days by giving for 2 days, 2 or 3 times a day, 0·1 gramme of quinine, no quinine on the third day, and restarting the process on the fourth. The paroxysms were terminated by giving 0·2 gm. of quinine 5 times daily for 5 days, fever ceasing in 24 to 48 hours.

C. L.

NICOLE (J. Ernest) & STEEL (John P.). **Acquired Immunity to Malarial Inoculation.**—*Jl. Trop. Med. & Hyg.* 1925. Dec. 1. Vol. 28. No. 23. pp. 428-429.

In 14 of at least 102 general paralytics, who had not shown sufficient mental or physical benefit from a first, deliberately induced, malarial infection (which had been terminated by treatment at least 6 months earlier) reinfection was attempted on 26 occasions by intravenous or intramuscular injections of malarial blood, or in 1 case by malarially

infected mosquitoes. As controls, hitherto non-infected persons were in all cases injected from the same syringeful of blood as were these attempted reinfections. All but one of the noninfected cases became infected, while none of the previously infected became reinfected. All the primary infections were terminated by quinine administered "until the blood was definitely negative to microscopic examination." Eight relapsed. No relationship between the blood classification of donor and recipient was traceable. All but 2 [the Table shows one] have shown change in the cerebrospinal fluid.

C. L.

NICOLE (J. Ernest) & STEEL (John P.). **Further Report on Acquired Immunity to Malarial Inoculation.**—*Jl. Trop. Med. & Hyg.* 1926. Feb. 1. Vol. 29. No. 3. pp. 48-49.

Two cases of general paralysis, refractory to intravenous inoculation of the Winwick strain of *P. vivax*, were at once infected by JAMES's infected mosquitoes. A third case, originally mosquito infected, did not react to a subsequent mosquito infection, an intramuscular, or an intravenous injection. After another infected mosquito had fed upon him, parasites were found in the blood, but no clinical evidences of infection were present. Three other cases, refractory to injection by the Winwick strain, were infected by a new one.

C. L.

KÜHNHOLD (Grete). Abnorme Formen von Malaria tertiana-Parasiten bei Impfmalaria. [**Abnormal Forms of Tertian Parasites in Inoculation Malaria.**]—*Cent. f. Bakt.* I. Abt. Orig. 1926. Mar. 1. Vol. 98. No. 1-2. p. 113. With 1 text fig.

In a paralytic infected from a strain of *P. vivax* which had already had 3 direct passages, there appeared, among typical tertian forms, segmenting forms more than half of which were of daisy rather than mulberry pattern, and with 6 to 10 spores. Sexual forms were not detected with certainty. The possibility of a mixed tertian and quartan infection is mentioned.

C. L.

BACHMANN (Franz). Spontane Ruptur der Milz bei Impfmalaria. [**Spontaneous Rupture of the Spleen in Inoculation Malaria.**]—*Muench. Med. Woch.* 1926. Mar. 26. Vol. 73. No. 13. pp. 528-530. [10 refs.]

Bachmann cites 4 cases of spontaneous rupture of the spleen after injected malaria, and describes from his own practice a fifth occurring in a man of 47 with commencing general paralysis. He had received intramuscularly 5 cc. of tertian blood; after an incubation period of 23 days a typical malarial attack occurred with many plasmodia in the cutaneous blood, and the spleen became palpable. Next day the temperature rose sharply without rigor, falling to normal at night. At 6 next morning he got out of bed to use the night stool, and in a few minutes was dead. The rupture was in this case an extensive one, lying at the lower pole.

C. L.

ADELHEIM (R.). Zur pathologischen Anatomie der Impfmalaria bei progressiver Paralyse. [**Morbid Anatomy of Inoculation Malaria in General Paralysis.**] —*Wien. Klin. Woch.* 1926. Apr. 8. Vol. 39. No. 15. pp. 412-416. [11 refs.]

Sixty cases were intravenously injected with one of two strains of *P. vivax*, with incubation periods of from 11 to 14 days. One proved refractory. In direct conjunction with the treatment, 6 persons died, 2 of them as the result of ruptured spleen. The organ was, in one, so disorganized as to be unsectionable; in the other there was extraordinary hyperaemia and hyperplasia of the pulp, with many polymorphonuclear leucocytes, pulp cells and endothelial cells with much protoplasm. Pigment, haemorrhages, broken up red corpuscles and clumps of streptococci were added to the picture. Sepsis was, then, added to malaria. It is noted that in Riga, whence the report comes, the deaths of paralytics not infected with malaria are from pneumonias, cystitis, pyelonephrosis, fractures and "decubitus," and that malarial infection predisposes to these.

C. L.

RUDOLF (G. de M.). & RAMSAY (J. C.) **Erythrocytosis in Artificially-Inoculated Malaria.** —*Ann. Trop. Med. & Parasit.* 1925. Dec. 16. Vol. 19. No. 4. pp. 419-428. With 4 charts. [8 refs.]

In 4 cases of general paralysis inoculated with benign tertian malaria an erythrocytosis preceded the anaemia. It was independent of mode of injection, sex, and history of previous malaria. Regeneration was complete within three weeks, irrespective of the degree of anaemia, and a second erythrocytosis ensued. Haemoglobin followed the red cells, with a colour index however as low as 0·5, and regeneration was less rapid and the amount did not over-reach normal as with the red cells.

C. L.

HEINEMAN. Ueber die Malariabekämpfung. [**Anti-Malarial Measures.**] —*Seuchenbekämpfung.* 1926. Vol. 3. No. 1. pp. 35-46. With 7 charts in text. [6 refs.]

Stress is laid upon papers by RODENWALDT (this *Bulletin*, vol. 22, p. 58) and WALCH (l.c. vol. 21; p. 607). It is pointed out that a malarial campaign must make use of the established means of investigation, namely, the haemoglobin, parasite, and spleen indices, but should add to these the determination of the species of anopheles concerned as transmitter, of the number of its females infected, and of the breeding places it uses.

The work now reported is a continuation of WALCH's; the country is a rice growing one, suitable accordingly for the breeding of *A. sinensis*. WALCH, it will be remembered, found buffaloes more attractive to mosquitoes than is man, and for their collection and destruction used mosquito traps attached to the buffalo byres. There has been a heavy local increase in malaria; the percentage infection of *A. sinensis* has been between 10 and 20; this mosquito, presumably on account of the care taken of the rice fields, breeds now in water heavily contaminated with urine and faeces; there has been an entire disproportion between the catches of larvae and the catches of females in the traps attached to the byres; but when collection of this species became confined to dwellings, the parallelism between larval and adult catches

was re-established. For the female *A. sinensis* buffaloes have not, accordingly, proved an effective counter-attraction to man. Thorough quinine treatment, accompanied by this species-sanitation, has greatly improved health, but, it is pointed out, the situation demands continual watchfulness.

C. L.

CELLI-FRAENTZEL (Anna). Malariabekämpfung in der römischen Campagna. [**Malarial Campaign in the Roman Campagna.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Dec. 16. Vol. 29. No. 12. pp. 675-685.

For many years her husband's co-worker, the widow of Angelo CELLI recounts the result of her labours in the worst part of the Roman campagna. Perhaps the most significant part of the paper consists of two tables showing the first and subsequent malarial attacks amongst those who had, and had not, taken prophylactic quinine. The period covers 4 years. The ordinary dosage, given by nurses, was 0·6 gm. (10 grs.) daily of quinine bisulphate or 0·4 gm. of bihydrochloride, but for certain cattle herds from the hills it had, in the autumn, to be increased to 1 gm. Regarding those who took this prophylaxis: of 1,612 who had never had malarial attacks, the incidence of such attacks was 3·2 per cent.; while among 3,538 who had previously had attacks it was 10·4 per cent. Regarding those who refused to take quinine: among 162 who had had no previous attack 29 per cent. showed such within the period of observation; while among 793 who had, the percentage was 53. The result surprised Professors GRASSI and MARCHIAFAVA, and converted the former from a dissenter from such prophylactic issue to an ardent advocate. Readers of the original should not omit the smaller type, which contains matter essential for the following of the argument.

C. L.

i. SWELLENGREBEL (N. H.). Considérations sur la prophylaxie du paludisme par la déviation des anophèles. [**Malaria Prophylaxis by Anopheles Deflection.**]—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 725-727. [9 refs.]

ii. ROUBAUD (E.). Peuplements humains et peuplements animaux comme facteurs économiques comparés de la déviation anophélienne antipalustre.—*Ibid.* pp. 728-730.

i. ROSS, it is pointed out, has concluded on mathematical grounds that with a constant number of anopheles an increase in the human population will dilute human and lessen anopheline infection, provided that the added supply of food does not add to the numbers of anopheles. BENTLEY has based conclusions on ROSS's foundation without considering ROSS's proviso. Swellengrebel points out that the effect of cattle in this matter, urged by ROUBAUD, is explicable as causing exactly the same effect as that contemplated by ROSS, with the added advantage that cattle do not become infected, and without any suggestion of the production of a zoophil race of mosquitoes.

ii. Roubaud dissents from SWELLENGREBEL's conclusions, pointing out that the protective rôle of animals is threefold, dilution of anopheline infection, dilution of human infection, progressive sterilization of infected anopheles by the destruction of those sporozoits which are injected into animals. He inquires whether the infection of anopheles

in Holland during the winter only, when mosquitoes are hibernating in human houses and cannot be attracted by animals, is not evidence of the superior attraction of animals for anopheles.

C. L.

ROUKHADZÉ (N.). Un exemple de l'influence de la stabulation des animaux sur la diminution du paludisme, en Géorgie. [**Influence of Stabling of Animals on the Decrease of Malaria in Georgia.**]—*Bull. Soc. Path. Exot.* 1926. Feb. 10. Vol. 19. No. 2. pp. 100–105. [2 refs.]

There are in this district three villages situated under like topographical conditions: Estonka, inhabited by Esthonians, where houses are of masonry and of European standard, the people well nourished, often taking quinine, developing milk production, making an independent living thereby, and housing their cattle near their dwellings; Wladimirovka, inhabited by Russians who act as labourers on the land; Nikolaevka-Anastaceoka, inhabited by Georgians, who carry on rural cultivation, and live in huts described as full of holes and draughts. Neither of the last two villages stable their cattle. It is concluded that this stabling of cattle in Estonka completely explains its low splenic index, and it is noted that anopheles were found in the stables of Estonka, but not in the neighbouring houses, and also that, it being autumn and cold, there were but few at all. [Their distribution in the Georgian houses at all seasons, and the relative distribution between stables and houses in Estonka at the season of presumed infection, are apparently still unknown.]

C. L.

WALRAVENS (P.). Stérilisation des réservoirs de virus malariens. [**Sterilization of Malaria Carriers.**]—*Ann. Soc. Belge de Méd. Trop.* 1926. Jan. Vol. 5. No. 2. pp. 201-204.

Continuing his investigations [this *Bulletin* vol. 21, p. 600] Walravens gave to the children concerned a "curative" treatment over 3 days, with the daily dosage (administered in two halves) below indicated, in order by so doing to remove all schizonts from the peripheral blood—presumably to examination of a single film. He found that for children under 5 he had to give 1 gramme [15 grains] to effect this. Having done so he continued quinine, in the prophylactic doses displayed in the Table, which, however, as will be noted, did not prevent reappearance of schizonts. In none of these 110 children were crescents to be found after the prophylactic course, although they were present in 10 per cent. after the curative one. Their disappearance is of course, of marked prophylactic significance. The failure to remove schizonts from the peripheral blood is attributed to a 30 per cent. anopheline infection, to administration of quinine in the morning instead of the evening, and to some lack of discipline. The dosage indicated is in grammes.

Age in years.	Percentage with parasites.	Curative dose of quinine daily for three days.	Percentage still having parasites.	Curative dose daily for three days.	Percentage still having parasites.	Preventive dose daily for three months.	Percentage infected after three months.
1—5	95·3	0·75	24·6	1	0	0·1	12·7
5—10	94·9	1	0	1	0	0·2	8·1
10—15	90	1·5	0	1·5	0	0·25	20

C. L.

BARBER (M. A.). **Quinine as a Preventive of Malaria: a Review of some Recent Literature.**—*New Orleans Med. & Surg. Jl.* 1926. Feb. Vol. 78. No. 8. pp. 530-534. [9 refs.]

The literature in question has already been abstracted in this *Bulletin*. Barber writes: "From the evidence before us one deduction seems clearly justified: Preventive quinine, however faithfully administered, cannot be depended on to prevent infection . . . Quinine is preventive chiefly, if not wholly, through its action on an infection already acquired. . . . We must have controls and a most careful analysis of our findings if we are to draw any valid conclusions from our observations." How much smaller and more useful this *Bulletin* would be if all workers committed that last sentence to memory.

C. L.

FALCIONI (Domenico). Per una esecuzione sempre più razionale della profilassi, specie chininica, della malaria. [**A More Rational Quinine Prophylaxis of Malaria.**]—*Policlinico.* Sez. Prat. 1926. Mar. 8. Vol. 33. No. 10. pp. 338-342.

It is urged that malarial distribution is almost always focal even when most intense; that anopheles are lovers of one restricted locality from which their radius of movement is slight, affecting, for instance, their likelihood of reaching the various storeys of one house, or neighbouring houses; that they do not readily move thence and infect others, as witness the finding by GRASSI and SELLA that of 147 specimens caught in a dormitory 15 were infected, while of 105 captured in a neighbouring stable none were. The inference is that quinine prophylaxis should be directed to foci of infection, the drug being given, according to the intensity of infection, in doses of 0·2 to 0·6 grammes.

C. L.

THIRUPAD (R. K.). **The Rôle of Quinine as an Anti-Malarial Measure.**—*Madras Med. College Mag.* 1926. Jan. Vol. 5. No. 3. pp. 220-223.

In a plantation in Southern India, "admittedly the worst in the district," and having a spleen rate of 75, all cases of enlarged spleen were given 6 grains of cinchona febrifuge, with iron and arsenic, daily for three months before the fever season. During the fever season this régime was extended to the whole labour force. The results are described as satisfactory.

C. L.

i. MEISSNER (Kurt). Die Wirkung der Impfmalaria auf den Liquor cerebrospinalis der Lueskranken. [**Effect of Inoculation Malaria on the C.S.F. of Syphilitics.**]—*Dermat. Ztschr.* 1925. Dec. Vol. 46. No. 1. pp. 8-25. [35 refs.]

ii. FORSTER (E.). Spirochätenfunde bei mit Malaria behandelten Paralytikern. [**Spirochaetes found in Malaria-treated Paralytics.**]—*Muench. Med. Woch.* 1925. Dec. 18. Vol. 72. No. 51. pp. 2197-2200. With 4 text figs. [6 refs.]

GERSTMANN (Josef). Spirochätenbefunde bei mit Malaria behandelten Paralytikern. Bemerkungen zum gleichnamigen Aufsatz Prof. E. Forsters in Nr. 51 der M.m.W. vom 18 Dezember, 1925.—*Ibid.* 1926. Mar. 12. Vol. 73. No. 11. pp. 436-437 [4 refs.]

iii. RODENWALDT. (Ernst). Internationale Untersuchungsnormen für die Beurteilung einer malariainfizierten Bevölkerung. [**International Standards of Investigations in the Study of a Malarial Population.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Vol. 30. No. 1. pp. 43-56.

iv. NOCHT (B.). Ueber Erfahrungen bei Malaria-Studienreisen in Europa. [**Experiences of Malaria Study Tours in Europe.**]—*Ibid.* pp. 1-17.

v. DHAIRYAM (J.). **Notes on Malaria in the Agency Tracts, Madras Presidency.**—*Indian Med. Gaz.* 1926. Jan. Vol. 61. No. 1. pp. 9-10.

vi. JHAVERI (Madan H.). **The Gastro-Intestinal Type of Malaria.**—*Ibid.* p. 26.

vii. SCHRUMPF-PIERRON (P.) & PAGNIER (A.). De l'importance diagnostique et thérapéutique des accès algides de paludisme. [**The Diagnostic and Therapeutic Importance of Algid Attacks of Malaria.**]—*Presse Méd.* 1925. Dec. 9. Vol. 33. No. 98. pp. 1618-1619. With 4 charts in text.

i. Energetic antisyphilitic treatment with salvarsan, mercury, and bismuth has no good effect on the cerebrospinal fluid ; but malaria gives improvement in all and induces normality in some, the change being marked in early cases. The heart must be watched in elderly persons.

ii. In two of three paralytics, who had been treated by malaria without mental benefit, spirochaetes were found on dark ground illumination of material obtained by puncturing the forebrain by Neisser-Pollack's method.

iii. The established methods for determining malarial incidence are discussed.

iv. The tour of the Malaria Commission of the League of Nations is summarized for German readers. An interesting point brought out is that visceral leishmaniasis, thoroughly established by splenic puncture, is widely endemic in Spain, and that cases of cutaneous infection are numerous.

v. For cerebral malaria the writer advocates 10-grain, daily intramuscular doses of quinine, and believes that intravenous injections increase collapse.

vi. Five cases of "malaria," with severe abdominal pain and tenderness, vomiting, constipation, high fever and, later, collapse, were cured by intramuscular injections of quinine. Five hundred such injections have given no untoward results.

vii. The writers elaborate their thesis (this *Bulletin* vol. 22, p. 806) and stress, what will presumably be generally admitted, that great anaemia may result from cryptic infection, such persons being infectious and difficult to cure.

C. L.

i. BAYLEY-DE CASTRO (A.). **The Vagaries of Malaria. The Hepatic Type.**—*Indian Med. Gaz.* 1926. Jan. Vol. 61. No. 1. pp. 25-26.

ii. FOSSATI (V.) & SALVO (C.). [**Tertian Malaria with a Long Latent Period.**]—*Rev. Sud.-Amer. de Endocrinol.* 1925. Dec. 15. p. 871. [Summarized in *Brit. Med. Jl.* 1926. Mar. 6. (Epitome of Current Med. Literature). p. 41.]

iii. DE LEMOS (Bento). Nevralgias paludicas do trigemeo. [**Malarial Neuralgia of the Trigeminus.**]—*Arch. Brasileiros de Med.* 1925. Dec. Vol. 15. No. 12. pp. 777-781.

iv. GOEBEL (Carl). Malaria und Splenektomie. (Eine literarische Studie.) [**Malaria and Splenectomy.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1926. Vol. 30. No. 1. pp. 31-41.

v. GOJCHER (B.). Die Ausscheidung von Amylase mit dem Harne bei Malariakranken.—[**The Excretion of Amylase in the Urine of Malaria Cases.**]—*Russian Jl. Trop. Med.* Moscow. 1925. No. 1-2-3. German summary p. 73. [In Russian pp. 51-52. 5 refs.]

vi. SCHABASCHOV (D.). Die Sphygmographie bei Malaria. [**Pulse Tracings in Malaria.**]—*Ibid.* German summary p. 71. [In Russian pp. 13-19. With 9 charts in text.]

vii. PERNET (George). **Malaria as a Therapeutic Agent.** [Correspondence.]—*Lancet.* 1925. Dec. 5. p. 1197. [1 ref.]

i. A case showing subtertian parasites, no *Entamoeba histolytica,* an enlarged and tender liver, a board-like abdomen, and leucocytes to 13,000, was cured by emetine, quinine and arsenic.

ii. Having lived in a malarious district in Italy, and then for 5 years in Buenos Aires, a man developed malaria for the first time, *P. vivax* being found in the blood.

iii. Facial neuralgia of long standing cleared up in two cases under quinine. In one the pain appeared about the same hour of the day and was associated with enlarged spleen ; in the other the hour of incidence was irregular. In neither was the blood examined.

iv. It is concluded that splenectomy may benefit malarial cachexia, especially with preliminary tying or clamping of the splenic vessels. Its possible modes of action are noted.

v. In 26 malaria cases the amylase in the urine was determined several times. It is lessened during an attack, and its quantity is without relationship to the chlorine, or to the reaction, of the urine.

vi. Dicrotism in the cold stage, anacrotism or monocrotism in the hot stage, and monocrotism in apyrexia, are held typical.

vii. Louis XI. of France begged the Prior of Notre Dame des Salles at Bourges that he should pray incessantly for the monarch's reception of quartan malaria, since his physicians believed that without this the epilepsy from which he suffered would remain uncured.

C. L.

ASCOLI (Vittorio). Le traitement specifique du paludisme.—*Semana Médica.* 1925. Nov. 26. Vol. 32. No. 48 (1663). pp. 1369-1375.

CORTESI (Tancredi). Alcuni casi di paralisi progressiva curati con la inoculazione della malaria.—*Policlinico.* Sez. Prat. 1925. Dec. 7. Vol. 32. No. 49. pp. 1708-1709.

CRÉTEUR. A propos du traitement de la paralysie générale par la malaria, suivi de cure aux arsénobenzols ou aux sels de bismuth.—*Arch. Méd. Belges.* 1925. Sept.-Oct. Vol. 78. Nos. 9-10. pp. 293-298.

MEYER (E.). Zur Malariabehandlung der progressiven Paralyse.—*Deut. Med. Woch.* 1926. Feb. 19. Vol. 52. No. 8. pp. 313-314. [2 refs.]

ROWSTRON (Noel F.). Malarial Treatment of Tabes Dorsalis. [Memoranda.]—*Brit. Med. Jl.* 1925. Dec. 5. pp. 1062-1063.

SERGENT (Edm. & Et.), PARROT (L.), FOLEY (H.) & CATANEI (A.). De l'emploi de la quinine contre le paludisme.—*Arch. Inst. Pasteur d'Algérie.* 1925. June. Vol. 3. No. 2. pp. 196-200. [1 ref.]

THRASH (E. C.). Report of a Case of Cerebrospinal Syphilis treated by Inoculation with Malarial Parasites.—*Amer. Jl. Syph.* 1926. Jan. Vol. 10. No. 1. pp. 94-95.

WEYGANDT (W.). Erfolge und Bedenken bei der Malariabehandlung der progressiven Paralyse.—*Therap. der Gegenwart.* 1926. Feb. Vol. 67. (N.S. Vol. 28). No. 2. pp. 63-67. [5 refs.]

REVIEWS AND NOTICES.

Chininum Scriptiones collectae, anno MCMXXIV editae.—pp. xii+262. With 22 plates, 12 plates of posters, 1 fig. & 1 map. 1925. Amsterdam: Bureau for Increasing the Use of Quinine, 48 De Wittenkade.

It is a fair criticism of a publication produced by an organization whose object is to increase the consumption of quinine that it is not the place in which to look for opinions adverse to the drug. It is, however, the case that, apart from contributions (accompanied by beautifully reproduced portraits) from GRASSI, LAVERAN and ROSS, two of them already dead to our great loss, all but three of the 19 articles dealing with malaria are reproductions in, or translations into English of, collected papers which have already appeared in various Journals, and that they all exhibit in one way or another the value of quinine. It is, however, equally the case that the comprehensive arrangements made by the Bureau of Hygiene and Tropical Diseases for a full collection of current literature have been able to place at the writer's disposal no publication upon which a contrary case might be based; so that the volume contains a fair statement of the position of medical experience on the value of quinine and the other alkaloids of cinchona. Most of the papers dealing with the value of quinine in malaria have already been abstracted in this *Bulletin*. Of those which are new, GRASSI's contribution comprises a masterly survey of the methods used for the prevention of malaria with special reference to Italy. It is noted that spots abandoned by all and called "the fields of death" are now family homes. LAVERAN characterized quinine as a specific remedy. ROSS notes that malaria has withheld the entire African Continent from civilization. Besides the portraits, there are 20 other plates as beautifully reproduced as the former. The whole book repays study.

Clayton Lane.

CARLETON (H. M.). [M.A., B.Sc., D. Phil., University Lecturer in Histology, Oxford.] **Histological Technique for Normal Tissues, Morbid Changes and the Identification of Parasites.** (Chapters VII and VIII in Collaboration with Frederic HAYNES, B.A., Demonstrator of Histology.)—pp. xv+398. With 17 text figs. 1926. London: Oxford Medical Publications. Humphrey Milford. Oxford University Press. [Price 16s. net.]

This volume gives in a compact form the chief methods employed in the histological examination of human and other mammalian organs.

The author has included two chapters on the cell itself, having regard particularly to the conception of cells and tissues as colloidal entities which are very easily altered as the result of the various processes to which they are subjected.

The methods of fixation and staining are very clearly set forth and a number of "Type Methods" are described in detail. When these have been mastered special methods should not be difficult.

The methods of microscopic examination of the various organs and tissues are given in detail, and a valuable part of the book is found in the notes appended to the various methods. These "Notes" culled from the author's experience give the little "Tips" that are so valuable in mastering the technique of the various methods, and will be found extremely useful to laboratory workers.

The author has shown admirable judgment in selection of the various processes described. Histo-chemical tests, injection methods, vital

staining, histo-pathological processes and bacteriological methods are also included, and a bibliography of the standard works and important monographs is appended.

While the histological technique is very clearly and fully dealt with, the chapter on bacteriological methods is not up to the rest of the book. For instance, in Gram's stain, films treated for two to three minutes in 1 per cent. aqueous methyl violet will, after the application of iodine, require a considerable amount of decolourizing with alcohol. Thirty seconds in $\frac{1}{2}$ per cent. methyl violet is long enough.

In Ziehl-Neelsen's stain, the time given for decolourizing the film in 25 per cent. sulphuric acid is only three to five seconds. This doubtless is a slip, and even three to five minutes is not sufficient if blood is present in the preparation.

There are a number of errors in the text. The chemical formulas for potassium nitrate and borax are given as K_2NO_3 and $Na_2B_2O_7$ respectively. On page 106 an 8 mm. objective is termed a $\frac{1}{6}$ inch. On page 329 "Chlorinati" should be spelt "chlorinatae."

The printing and binding are good, and there is an adequate index.

This volume can be recommended to all workers on histological methods, and will be found of great value to pathologists and senior students.

M. McCartney.

We have to deplore the deaths on June 2nd of Sir William LEISHMAN and of Sir Stewart STOCKMAN. Sir William LEISHMAN joined the Honorary Managing Committee in April 1911 before the expansion of the then Sleeping Sickness Bureau into the Tropical Diseases Bureau. Sir Stewart STOCKMAN joined the Committee on the Bureau's expansion in 1912.